

1938  
BRITANNICA  
BOOK OF  
THE YEAR






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**1938**  
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**THE YEAR**





CHIANG KAI-SHEK



A Record of the March of Events of 1937

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# 1938

## BRITANNICA

## BOOK OF

## THE YEAR

• Prepared Under the Editorial Direction of  
Franklin H. Hooper, Editor of Encyclopaedia  
Britannica, and Walter Yust, Associate Editor  
of Encyclopaedia Britannica

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THE EDITORS

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# INTRODUCTION

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**F**IVE generations have come and gone since the publication of the First Edition of the *Encyclopaedia Britannica*. Other editions followed until today we have the latest or 14th. The interval in time between these editions was naturally considerable, and no device was employed to fill the gap. Such a procedure was satisfactory in an age that was more or less static, in which knowledge increased slowly and progress was made at what today would seem a snail's pace. But such a procedure is not suited to the present dynamic era when knowledge increases at an ever faster pace, when technical and scientific progress and economic change in a single year are often as great as in an entire decade of an earlier century.

The *Britannica Book of the Year* bridges the gap between editions. It answers demands on the part of the public for an authoritative handbook recording what has happened in a single year. It consolidates and summarizes the significant facts, whether statistical or historical, of the year. And, most important, it keeps up to date the sets of the *Britannica* in the hands of the public.

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F.A.M.W.	CAPTAIN F. A. M. WEBSTER. Joint Editor of the <i>Blue Magazine</i> , London. Member of the British Olympic Association.	Education ( <i>in part</i> )
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Fr.Ro.	FREDERICK ROTHE. Chairman, Handball Committee of the New York Athletic Club, New York.	Jewish Welfare Board
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F.Wal.	FREDERICK WALKER, M.A., D.Sc., Ph.D. EdIn. Lecturer in Geology at the University of St. Andrews, Scotland. 1929-37.	Federal Trade Commission
F.W.Ga.	FREDERIC WILLIAM GANZERT, M.A., Ph.D. Assistant Professor of History and Political Science, University of Utah, Salt Lake City.	Housing ( <i>in part</i> )
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G.D.Bi.	GEORGE D. BIRKHOFF, A.M., Ph.D. Professor of Mathematics, Harvard University, Cambridge, Mass.	Roman Catholic Church
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G.D.V.	GRACE D. VANAMEE. Assistant to the President, American Academy of Arts and Letters.	Child Labour
		Child Labour Amendment
		Copper
		Iron and Steel
		Nickel, etc.
		United Church of Canada
		Rowing ( <i>in part</i> )
		Congressional Legislation
		American Association for the Advancement of Science
		International Labour Office
		Popular Front
		Wages and Hours ( <i>in part</i> )
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G.St.	G. STRUVE. Expert in Russian Literature, University of London, School of Slavonic and East European Studies.	Russian Literature
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H.Fw.	HUBERT FITCHEW. Editorial staff, <i>Encyclopaedia Britannica</i> , 14th edition. Musical contributor and reviewer of <i>The Sunday Times</i> , London.	Interior Decoration, etc.
H.G.F.	H. GRANVILLE FELL. Editor, <i>The Connoisseur Magazine</i> , London.	Art Exhibitions Art Sales
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J.I.D.	<b>J. IRVING DAVIS.</b> Of Davis & Orioli, rare book sellers, London.

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J.Jas.	<b>JOSEPH JASTROW, Ph.D., LL.D.</b> Lecturer, New York School of Social Research. Formerly, Professor of Psychology, University of Wisconsin.	Psychology
J.L.F.	<b>J. L. FRAZIER.</b> Editor, <i>The Inland Printer</i> , Chicago.	Printing
J.L.He.	<b>JOHN L. HERVEY.</b> Author of <i>Racing in America</i> ; <i>American Race Horses</i> ; etc.	Horse Racing ( <i>in part</i> )
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J.S.	<b>SIR JOSIAH STAMP, G.B.E., D.Sc., LL.D., F.R.A.</b> Chairman and President of the Executive, London Midland and Scottish Railway. Director of the Bank of England.	Taxation Wealth and Income, Distribution of ( <i>in part</i> )
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J.Sc.	<b>JOSEPH SCHAFER, Ph.D., LL.D.</b> Superintendent of the State Historical Society of Wisconsin.	Wisconsin
J.S.McL.	<b>JAMES S. MCLESTER, M.D.</b> Professor of Medicine, University of Alabama School of Medicine.	Dietetics
J.Sy.	<b>JOHN SHAPLEY, Ph.D.</b> Professor of Art, University of Chicago. Editor, <i>The Art Bulletin</i> .	Art Galleries and Art Museums
J.T.Ar.	<b>JOHN TAYLOR ARMS, M.S.</b> President, Society of American Etchers.	Etching
J.T.C.	<b>JOHN THOMAS CULLITON, B.A., M.A.</b> Assistant Professor of Economics and Political Science, McGill University, Montreal.	Alberta King, William Lyon Mackenzie Saskatchewan Yukon Territory, etc.
J.T.W.	<b>JOHN T. WINTERICH, A.B.</b> Member of <i>The Colophon</i> editorial board, New York. Author of <i>A Primer of Book Collecting</i> ; etc.	Book-collecting
J.W.Ca.	<b>JOHN WILLIAM CALHOUN, M.A.</b> President of the University of Texas.	Texas, University of
J.W.Sc.	<b>JAMES WALTER SCHADE, A.B.</b> Director of Research, The B. F. Goodrich Company, Akron, Ohio.	Rubber and Rubber Manufacture
K.C.M.S.	<b>KENNETH C. M. SILLS, A.M., LL.D.</b> President of Bowdoin College, Brunswick, Maine.	Maine
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K.L.R.	<b>K. L. RAWSON, A.B.</b> Navigating officer and geographer on Byrd's expedition.	Antarctica ( <i>in part</i> )
K.S.L.	<b>KENNETH S. LATOURETTE, D.D., Ph.D.</b> Professor of Missions and Oriental History, Yale University, New Haven, Connecticut.	Foreign Missions ( <i>in part</i> )
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L.A.E.	<b>LYNN ARTHUR EMERSON, E.E., Ph.D.</b> Assistant Superintendent of Schools, in charge of Vocational Education, Yonkers, New York.	Vocational Education ( <i>in part</i> )
L.A.M.	<b>LESLIE A. MILLER.</b> Governor of Wyoming.	Wyoming
L.A.We.	<b>LUTHER ALLAN WEIGLE, Ph.D., D.D., Litt.D., S.T.D., LL.D.</b> Dean of the Divinity School, Yale University, New Haven.	Sunday Schools
L.Bn.	<b>LYMAN BRYSON, M.A.</b> Professor of Education, Teachers College, Columbia University, New York. Author of <i>Adult Education</i> ; etc.	Adult Education
L.Ch.	<b>LAWRENCE CHAMBERLAIN, A.B.</b> President, Chamberlain Associates, Inc. Author of <i>Principles of Bond Investment</i> ; <i>The Work of the Bond House</i> ; etc.	Bonds
L.C.S.	<b>LOUIS CARTER SMITH, B.S., LL.B., LL.M.</b> Secretary-Treasurer National Archery Association of the United States, Boston, Mass.	Archery
L.D.B.	<b>LEWIN D. BARRINGER.</b> General Manager, The Soaring Society of America, Inc., Philadelphia.	Gliders
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L.de B.H.	<b>L. de BRED A HANDLEY.</b> Honorary coach, Women's Swimming Association of New York. Author of <i>Swimming for Women</i> ; etc.	Swimming
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L.Ef.	<b>LOUIS EFFRAT.</b> Member of <i>The New York Times</i> sports staff.	Billiards
L.El.	<b>LINCOLN ELLSWORTH.</b> Explorer. Awarded special gold medal by President Hoover from U. S. Congress. Author of <i>Our Polar Flight</i> ; etc.	Antarctic Exploration
L.E.L.	<b>LEWIS E. LAWES, Hon.D.Sc.</b> Warden, Sing Sing Prison, Ossining, New York.	Prisons ( <i>in part</i> )
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L.S.Mu.	LEWIS S. MUDGE, D.D., LL.D. Stated Clerk of the General Assembly of the Presbyterian Church in the United States.	Presbyterian Church (in part)
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M.T.	MICHAEL TIERNEY, M.A. Professor of Greek, University College, Dublin. Chairman of Editorial Committee, <i>Irish Free State Official Handbook</i> , 1932.	Irish Free State
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O.M.H.	O. M. HUSTVEDT. Captain, U. S. Navy; Officer in charge, Office of Island Governments, U. S. War Department.	Guam Midway Islands Wake Island
O.McK.	OLIVER MCKEE JR., B.A. Washington correspondent, <i>Boston Evening Transcript</i> , Washington.	Democratic Party Republican Party Roosevelt, Franklin Delano
O.We.	MAJOR GENERAL OSCAR WESTOVER. Chief of the Air Corps, War Department, Washington.	Air Forces (in part)
P.By.	PAUL BELLAMY, A.B. Editor, <i>Cleveland Plain Dealer</i> , Cleveland, Ohio.	Cleveland Ohio
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P.DeK.	PAUL DE KRUIF, M.D. Science Writer and Bacteriologist. Author of <i>Microbe Hunters</i> ; etc.	Infantile Paralysis
P.F.	P. FITZGERALD. Editor of <i>The Statist</i> , London.	Diamonds Gold
P.H.N.	PAUL H. NYSTROM, Ph.B., Ph.M., Ph.D. Professor of Marketing, Columbia University, New York.	Marketing
P.H.T.	P. H. THORP. Editor, <i>Scott's Monthly Journal</i> , Scott Stamp & Coin Company, New York.	Philately (in part)
P.H.W.	PERCY HENRY WINFIELD, F.B.A., LL.D., F.R.Hist.S., J.P. Professor of English Law, Cambridge University, England.	Law and Legislation
P.Jn.	DR. PER JACOBSSON. Economist of the Bank for International Settlements, Basle, Switzerland.	Bank for International Settlements
P.J.R.	PHILIP J. REILLY. Director, Retail Research Association and Associated Merchandising Corporation, New York.	Retail Sales (in part)
P.J.S.R.	P. J. S. RICHARDSON. Editor, <i>The Dancing Times</i> , London.	Dancing
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R.E.Bi.	ROLAND ERNEST BIRD, B.Sc. Stock Exchange Editor of <i>The Economist</i> , London.	Stock Exchanges (in part)
R.E.E.H.	REUBEN E. E. HARKNESS, B.D., Ph.D. President of the American Baptist Historical Society.	Baptist Church (in part)
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R.L.C.	RUSSELL L. CECIL, M.D. Professor of Clinical Medicine, Cornell University Medical School, New York.	Pneumonia
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R.McC.	MAJOR GENERAL SIR ROBERT MCCARRISON, C.I.E., M.D., D.Sc., F.R.C.P., LL.D. Lauréat de L'Académie de Médecine, Paris.	Vitamins
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R.R.P.	RAYE R. PLATT. Secretary, American Geographical Society, New York.	American Geographical Society
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S.McC.L.	SAMUEL MCCUNE LINDSAY, Ph.D., LL.D. Professor of Social Legislation, Columbia University, New York.	Bootlegging Liquor Laws
S.M.Ha.	SHELBY M. HARRISON, LL.D. General Director, Russell Sage Foundation.	Donations and Bequests
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T.J.D.	THOMAS J. DEEGAN. Member of <i>The New York Times</i> sports staff.	Air Races Automobile Racing, etc.
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W.D.B.	WILLARD DELL BIGELOW, A.B. Director of Research Laboratories, National Canners Association, Washington.	Canning Industry
W.E.B.	WILLIAM EDGAR BORAH. U. S. Senator from Idaho. Chairman, Senate Foreign Relations Committee.	Idaho
W.E.Ga.	W. E. GARRISON, Litt.D., B.D., Ph.D. Associate Professor of Church History, Disciples Divinity House and University of Chicago, Chicago.	Disciples of Christ
W.E.Ss.	WAYNE EDSON STEVENS, M.A., D.Ph. Professor of History, Dartmouth College, Hanover, New Hampshire.	New Hampshire
W.G.Ca.	WALTER G. CAMPBELL, LL.B. Chief, Food and Drug Administration, U. S. Department of Agriculture, Washington.	Drugs and Drug Traffic

<b>W.G.Cl.</b>	<b>W. G. CLIFFORD</b> , Editor of <i>Billiards and Snooker</i> .	<b>Billiards</b>
<b>W.H.Al.</b>	<b>WILLIAM HARVEY ALLEN</b> , Ph.D. Director, Institute for Public Service, New York.	<b>New York City</b>
<b>W.H.Br.</b>	<b>WILFRED H. BROOKES</b> . Editor, <i>Wisden's Cricketers' Almanack</i> , London.	<b>Cricket</b>
<b>W.H.Ch.</b>	<b>WILLIAM HENRY CHAMBERLIN</b> . Chief Far Eastern Correspondent at Tokyo, Japan, for <i>Christian Science Monitor</i> .	<b>Chiang Kai-Shek</b> <b>China</b> <b>Chinese-Japanese War</b> <b>Japan, etc.</b>
		<b>Lutherans</b>
<b>W.H.G.</b>	<b>WALTON HARLOWE GREEVER, A.M., D.D., LL.D.</b> Secretary of The United Lutheran Church in America, New York.	
<b>W.H.MeC.</b>	<b>WILLIAM HUNTER MCCREA, Ph.D., B.Sc., F.R.S.E.</b> Professor of Mathematics, Queen's University, Belfast.	<b>Astronomy</b>
<b>W.H.O.</b>	<b>WILFRED HUDSON OSGOOD, A.B., Ph.D.</b> Chief Curator of Zoology, Field Museum of Natural History, Chicago.	<b>Natural History Museums</b>
<b>W.H.T.L.</b>	<b>CAPTAIN W. H. T. LONG</b> . "Scolopax" of the <i>Shooting Times</i> , London.	<b>Shooting</b>
<b>W.Hu.</b>	<b>W. HUBBALL</b> . Editor of <i>The Silk and Rayon Journal</i> , Manchester, England.	<b>Rayon</b>
<b>W.I.K.</b>	<b>WILLFORD I. KING, Ph.D.</b> Professor of Economics, New York University.	<b>Purchasing Power of Money</b>
		<b>Federal Land Banks</b>
<b>W.I.M.</b>	<b>WILLIAM I. MYERS, Ph.D.</b> Governor of the Farm Credit Administration, Washington.	<b>Furs</b>
<b>W.J.Bt.</b>	<b>W. J. BRETT</b> . Editor, <i>Fur Trade Review</i> , New York.	<b>Railroads (in part)</b>
<b>W.J.C.</b>	<b>WILLIAM J. CUNNINGHAM, Hon. A.M.</b> Professor of Transportation, Harvard University, Graduate School of Business Administration, Boston.	
<b>W.J.He.</b>	<b>W. J. HEALY</b> . Formerly Provincial Librarian of Manitoba, Canada.	<b>Manitoba</b>
<b>W.J.T.</b>	<b>WILLIAM JOHN TYDEMAN, A.M.I.Mech.E.</b> Editor of <i>British Machine Tool Engineering</i> , London.	<b>Machinery and Machine Tools</b>
		<b>Helicopter</b>
<b>W.L.LeP.</b>	<b>W. LAURENCE LEPAGE</b> . Aeronautical engineer, Day & Zimmermann, Inc., Philadelphia.	<b>Intoxication, Alcoholic</b>
<b>W.L.T.</b>	<b>W. L. TREADWAY, M.D.</b> Assistant Surgeon General, U. S. Public Health Service, Washington.	<b>Labour Unions (in part)</b>
<b>W.M.Ci.</b>	<b>SIR WALTER MCLENNAN CITRINE, K.B.E.</b> General Secretary of the British Trades Union Congress.	<b>Trades Union Congress</b>
		<b>Basutoland</b> <b>Rhodesia, Northern</b> <b>Rhodesia, Southern</b> <b>South Africa, The Union of, etc.</b>
<b>W.M.Ma.</b>	<b>WILLIAM MILLER MACMILLAN, M.A.</b> Research Fellow in African History and Administration, University of Witwatersrand, Johannesburg, South Africa.	<b>Bankruptcy (in part)</b>
		<b>Dams</b>
<b>W.O.D.</b>	<b>WILLIAM O. DOUGLAS, M.A., LL.B.</b> Chairman, United States Securities and Exchange Commission.	<b>Louisiana</b>
<b>W.P.C.</b>	<b>WILLIAM PITCHER CREAGER, C.E.</b> Author of <i>Engineering for Masonry Dams</i> , etc.	<b>Meteorology (in part)</b>
<b>W.Pr.</b>	<b>WALTER PRICHARD, M.A.</b> Head of the Department of History, Louisiana State University, Baton Rouge.	<b>Religion</b>
<b>W.R.Gr.</b>	<b>W. R. GREGG, A.B.</b> Chief of Weather Bureau, U. S. Department of Agriculture, Washington.	
<b>W.R.I.</b>	<b>THE VERY REVEREND WILLIAM RALPH INGE, K.C.V.O., LL.D., D.Litt., D.D.</b> Dean of St. Paul's Cathedral, London, 1911-34.	<b>Telescopes</b>
<b>W.S.Ad.</b>	<b>WALTER S. ADAMS, A.M., D.Sc., LL.D.</b> Director, Mount Wilson Observatory of the Carnegie Institution, Pasadena, California.	
<b>W.S.G.</b>	<b>WALTER S. GIFFORD, A.B., LL.D.</b> President, American Telephone and Telegraph Company, New York.	<b>Telephone</b>
<b>W.S.To.</b>	<b>WALTER S. TOWER, M.A., Ph.D.</b> Executive Secretary, American Iron and Steel Institute, New York.	<b>American Iron and Steel Institute</b>
		<b>Protestant Episcopal Church</b>
<b>W.T.M.</b>	<b>RT. REV. WILLIAM T. MANNING, D.C.L., LL.D.</b> Bishop of New York.	<b>Motor Transportation (in part)</b>
<b>W.T.St.</b>	<b>W. TETLEY STEPHENSON, M.A.</b> Cassel Reader in Transport at the London School of Economics and Political Science.	<b>Chemical Warfare</b> <b>Civil Population, Protection of, etc.</b>
<b>W.T.We.</b>	<b>W. T. WELLS, B.A.</b> Barrister-at-law. Formerly, Oxford University Extension Lecturer in History and Political Theory.	<b>Indians, American</b>
		<b>Lynchings</b>
<b>W.W.B.</b>	<b>WILLARD W. BEATTY</b> . Director of Education, Office of Indian Affairs, U. S. Department of the Interior, Washington.	<b>Publishing</b>
<b>W.Wh.</b>	<b>WALTER WHITE, B.A.</b> Secretary, National Association for the Advancement of Colored People, New York. Author of <i>Flight</i> ; etc.	
<b>W.Yu.</b>	<b>WALTER YUST</b> . Associate Editor, <i>Encyclopaedia Britannica</i> .	
<b>X</b>	<b>ANONYMOUS.</b>	



# 1938-CALENDAR-1938

THE year 1938 of the Christian Era corresponds to the year of Creation 5698-99, of the Jewish Calendar; to the year 1356-57 of the Mohammedan Hegira; to the year 2598 of the Japanese Empire; to the 162nd of the United States; and to the 170th year of the *Encyclopædia Britannica*.

A world-wide movement in favour of a scientific and uniform measurement of time is resulting in the increased use of the Gregorian Calendar in Asia and the adoption of the New or Gregorian Style in countries previously continuing to use the Julian or Old Style. There

is a proposal to adopt a calendrical year of 364 days, adding a Year Day after Dec. 30 and, in Leap Year, a Leap Day after June 30. Such a 364-day year is divisible into four equal and uniform quarters of 91 days each or 13 weeks, the months in each quarter running to 31, 30 and 30 days. Alternatively, the 364-day calendrical year can be divided into 13 equal and uniform months of 28 days or 4 weeks. There is also a proposal for a fixed Easter. This would end the inconvenience due to movable feasts in the ecclesiastical, legal and educational calendars, particularly in Great Britain.

Jan. 1 New Year's Day.  
Jan. 1 Jewish Feast of Tebet.  
Jan. 6 Epiphany, or Twelfth Night.  
Jan. 11 English Law Sittings: Hilary Term begins.  
Jan. 17 Birth of Benjamin Franklin, 1706.  
Jan. 18 Birth of Daniel Webster, 1782.  
Jan. 19 Birth of Robert E. Lee, 1807.  
Jan. 21 Birth of "Stonewall" Jackson, 1824.  
Jan. 22 U.S.S.R. Anniversary of Lenin's Death (Jan. 21, 1924). Birth of Francis Bacon, 1560-1.  
Jan. 24 Birth of Frederick the Great, 1712.  
Jan. 27 Birth of Mozart, 1756.  
Jan. 30 Birth of Franklin D. Roosevelt, 1882.  
Jan. 31 Australia Day. Chinese New Year.  
Feb. 2 Birth of Schubert, 1797.  
Feb. 2 Candlemas. Purification of the Virgin.  
Feb. 3 Birth of Mendelssohn, 1809.  
Feb. 5 Birth of Dwight L. Moody, 1837.  
Feb. 5 Birth of Sir Robert Peel, 1788.  
Feb. 6 New Zealand Day.  
Feb. 7 Birth of Dickens, 1812.  
Feb. 11 Birth of Edison, 1847.  
Feb. 11 Coronation of Jimmu, First Emperor of Japan.  
Feb. 12 Birth of Abraham Lincoln, 1809.  
Feb. 12 Birth of Darwin, 1809.  
Feb. 14 St. Valentine's Day.  
Feb. 15 Birth of Galileo, 1564.  
Feb. 19 Birth of Copernicus, 1473.  
Feb. 22 Washington's Birthday, 1732.  
Feb. 23 Birth of Handel, 1685.  
Feb. 27 Birth of Longfellow, 1807.  
Mar. 1 St. David's Day, patron saint of Wales. Shrove Tuesday. Mardi Gras.  
Mar. 2 Ash Wednesday. Beginning of Lent.  
Mar. 3 Mohammedan New Year.  
Mar. 17 Jewish Purim (Deliverance through Queen Esther). St. Patrick's Day, patron saint of Ireland.  
Mar. 18 Birth of Cleveland, 1837.  
Mar. 21 Equinox. Beginning of spring.  
Mar. 23 Birth of Bach, 1685.  
Mar. 24 Mi-Carême. Fourth Thursday in Lent.  
Mar. 25 Annunciation. Lady Day. Quarter Day.  
Mar. 25 Grand National Steeplechase.  
April 1 Birth of Bismarck, 1815.  
April 1 April Fools' Day.  
April 1 William Harvey born, 1578.  
April 2 Oxford and Cambridge Boat Race.  
April 3 Birth of Washington Irving, 1783.  
April 5 Birth of Lister, 1827.  
April 10 Birth of William Booth, 1829.  
April 10 Summer Time begins (Great Britain).  
April 10 Palm Sunday.  
April 13 Birth of Thomas Jefferson, 1743.  
April 13 Hindu New Year.  
April 14 Maundy Thursday.  
April 15 Good Friday.  
April 16 Jewish Passover.  
April 17 Easter Sunday.  
April 18 English Bank Holiday.  
April 21 Princess Elizabeth born, 1926.  
April 23 St. George's Day. Shakespeare's Birthday (1564).  
April 24 United States Daylight Saving Time begins.  
April 27 Birth of Grant, 1822.  
April 28 William Pitt born, 1759.  
May 1 May Day. International Labour Festival.  
May 2 Royal Academy opens.  
May 7 Birth of Brahms, 1833.  
May 8 Birth of Gibbon, 1737.  
May 10 Confederate Memorial Day (also observed on May 30 and June 3).  
May 12 Coronation of King George VI (1937). Mohammedan: Birthday of the Prophet.  
May 14 Birth of Einstein, 1879.  
May 14 Total eclipse of moon visible in Western Atlantic, America and Pacific.

1938											
JANUARY				MAY				SEPTEMBER			
S	M	T	W	T	F	S	S	M	T	W	T
1	2	3	4	5	6	7	1	2	3	4	5
8	9	10	11	12	13	14	6	7	8	9	10
15	16	17	18	19	20	21	11	12	13	14	15
16	17	18	19	20	21	22	16	17	18	19	20
22	23	24	25	26	27	28	22	23	24	25	26
29	30	31					25	26	27	28	29
30	31						30	31			
FEBRUARY				JUNE				OCTOBER			
S	M	T	W	T	F	S	S	M	T	W	T
1	2	3	4	5		1	2	3	4	5	6
6	7	8	9	10	11	5	6	7	8	9	10
12	13	14	15	16	17	10	11	12	13	14	15
18	19	20	21	22	23	12	13	14	15	16	17
24	25	26	27	28	29	13	14	15	16	17	18
27	28	29	30	31		16	17	18	19	20	21
						22	23	24	25	26	27
						28	29	30	31		
MARCH				JULY				NOVEMBER			
S	M	T	W	T	F	S	S	M	T	W	T
1	2	3	4	5		1	2	1	2	3	4
6	7	8	9	10	11	3	4	5	6	7	8
12	13	14	15	16	17	10	11	12	13	14	15
18	19	20	21	22	23	13	14	15	16	17	18
24	25	26	27	28	29	16	17	18	19	20	21
27	28	29	30	31		22	23	24	25	26	27
						28	29	30			
APRIL				AUGUST				DECEMBER			
S	M	T	W	T	F	S	S	M	T	W	T
1	2	3	4	5	6	1	2	1	2	3	4
8	9	10	11	12	13	7	8	5	6	7	8
14	15	16	17	18	19	10	11	12	13	14	15
20	21	22	23	24	25	13	14	15	16	17	18
26	27	28	29	30	31	16	17	18	19	20	21
						22	23	24	25	26	27
						28	29	30	31		

May 20 North Carolina observes Mecklenburg Declaration of Independence.  
May 22 Birth of Wagner, 1813.  
May 24 Empire Day. Queen Victoria born, 1819.  
May 25 Birth of Emerson, 1803.  
May 26 Ascension Day.  
May 29 Total eclipse of sun visible in certain regions south of Equator.  
May 30 Memorial or Decoration Day — United States.  
May 31 Union Day: South Africa, 1910.  
June 1 Derby Day.  
June 2 China: Dragon Boat Festival.  
June 3 Birthday of Jefferson Davis, 1808.  
June 4 George III born, 1738.  
June 5 Whitsunday. Jewish Pentecost.  
June 5 Adam Smith born, 1723.  
June 9 Trooping the Colour in honour of King George VI's Birthday. His Majesty was actually born on Dec. 14.  
June 14 Birth of Harriet Beecher Stowe, 1811.  
June 14 to 17. Royal Ascot Week.  
June 15 Magna Carta signed, 1215. Birth of Grieg, 1843.  
June 16 Feast of Corpus Christi.  
June 16 to 25. International Horse Show, Olympia.  
June 17 Battle of Bunker Hill, 1775.  
June 20 to July 2. Tennis Championships, Wimbledon.  
June 21 Solstice. Beginning of Summer. Longest Day.  
June 24 St. John's Day.  
June 29 to July 2. Henley Regatta.  
July 1 Canada, Dominion Day.  
July 1 to 3. Battle of Gettysburg, 1863.  
July 1 to 6. Welsh National Festival.  
July 4 Independence Day. Birth of Hawthorne, 1804.  
July 5 Birth of Sarah Siddons, 1755.  
July 8 Birth of John D. Rockefeller, 1839.  
July 10 Birth of John Calvin, 1509.  
July 14 Bastille Day (celebrates 1789).  
July 15 St. Swithun's Day.  
July 16 Jewish Feast of Tammuz.

July 16 Birth of Mary Baker Eddy, 1821.  
July 19 Defeat of Armada, 1588.  
July 30 English Law Sittings: Trinity Term ends.  
July 30 to Aug. 6. Cowes Week.  
Aug. 2 Battle of Blenheim, 1704.  
Aug. 4 Queen Elizabeth's Birthday, 1900.  
Aug. 6 Jewish Feast of Abh.  
Aug. 15 Birth of Napoleon, 1769.  
Aug. 15 Birth of Scott, 1771.  
Aug. 15 Assumption.  
Aug. 28 Birth of Tolstoy, 1828.  
Aug. 28 Birth of Goethe, 1749.  
Aug. 29 Birth of Oliver Wendell Holmes, 1809.  
Sept. 2 Fire of London, 1666.  
Sept. 5 Labor Day.  
Sept. 7 Queen Elizabeth's Birthday, 1533.  
Sept. 18 Birth of Samuel Johnson, 1709.  
Sept. 20 Delhi Day, capture of city completed, 1857.  
Sept. 22 Birth of Faraday, 1791.  
Sept. 25 United States: Daylight Saving usually ends.  
Sept. 26 Jewish New Year.  
Sept. 26 Dominion Day, New Zealand.  
Sept. 28 Jewish Feast of Guedaliah.  
Sept. 20 Michaelmas: Quarter Day.  
Sept. 29 Birth of Clive, 1725.  
Oct. 2 Summer time ends (Great Britain).  
Oct. 5 Jewish Day of Atonement.  
Oct. 10 to 17. Jewish Feast of Tabernacles.  
Oct. 12 Columbus Day.  
Oct. 12 English Law Sittings: Michaelmas Term begins.  
Oct. 18 Jewish Rejoicing of the Law.  
Oct. 19 Surrender of Yorktown, 1781.  
Oct. 21 Trafalgar Day.  
Oct. 25 Moslem Ramadan begins.  
Oct. 25 St. Crispin and St. Crispinian.  
Oct. 27 Theodore Roosevelt born, 1858.  
Nov. 1 All Saints' Day. All Hallows.  
Nov. 5 Guy Fawkes' Day.  
Nov. 7 to 8. Total eclipse of moon generally visible from Western Australia to Arctic ocean.  
Nov. 8 Election Day, United States.  
Nov. 9 Lord Mayor's Show. Birthday of King Edward VII.  
Nov. 10 Birth of Martin Luther, 1483.  
Nov. 11 Armistice Day.  
Nov. 12 China: Birth of Sun Yat-sen, 1867.  
Nov. 19 Lincoln delivers Gettysburg address, 1863.  
Nov. 21 to 22. Partial eclipse of sun visible in North-western America, Northern Japan and North-eastern Asia.  
Nov. 22 Birth of George Eliot, 1819.  
Nov. 23, 24 and 25. Mohammedan: Ramadan ends.  
Nov. 24 Thanksgiving Day.  
Nov. 25 Birth of Carnegie, 1835.  
Nov. 27 First Sunday in Advent. Beginning of the Ecclesiastical Year.  
Nov. 30 John Bunyan baptized, 1628.  
Nov. 30 Birth of Mark Twain, 1835.  
Nov. 30 St. Andrew's Day, patron saint of Scotland.  
Dec. 2 Battle of Austerlitz, 1805.  
Dec. 5 U.S.S.R. Constitution Day.  
Dec. 8 Birth of Sibelius, 1865.  
Dec. 8 Immaculate Conception.  
Dec. 9 Birth of Milton, 1608.  
Dec. 14 King's Birthday (George VI).  
Dec. 16 Birth of Beethoven, 1770.  
Dec. 22 Solstice: Beginning of winter. Shortest Day.  
Dec. 25 Birth of Sir Isaac Newton, 1642.  
Dec. 25 Christmas.  
Dec. 26 Boxing Day. British Bank Holiday.  
Dec. 27 Birth of Kepler, 1571.  
Dec. 27 Birth of Pasteur, 1822.  
Dec. 28 Birth of Woodrow Wilson, 1856.  
Dec. 29 Birth of Gladstone, 1809.



# CALENDAR OF EVENTS, 1937

- Jan. 1, 1937: **New Year's Day.** The ancient Egyptians began their New Year at the autumnal equinox (September 21); the early Greeks and the Romans at the winter solstice (December 21), until Julius Caesar by the adoption of the Julian calendar postponed it to January 1st. Throughout the middle ages the 25th of March was the usual date among most Christian people. The Julian calendar was not altogether accurate with the result that by 1583, it was too long by 11 days, which were dropped by the Gregorian calendar in that year. This change was accepted at once by all Roman Catholic countries, but it was not until 1752 that England and her American colonies followed suit and until 1917 that Russia did so.
- Jan. 2, 1937: **Anglo-Italian accord was signed;** recognized freedom of communication in Mediterranean as a "vital interest" of both countries and pledged maintenance of Mediterranean status quo.
- Jan. 2, 1937: **Former U. S. Sec'y. of the Treasury Andrew W. Mellon** offered his \$19,000,000 art collection to the U. S. as a nucleus for a National Gallery of Art in Washington, to be constructed and endowed by him.
- Jan. 3, 1937: **German Gov't. promised to cease retaliatory acts** against Spanish Gov't.'s shipping as soon as demand for release of "Palos" cargo and passengers was met.
- Jan. 3, 1937: **Representatives of United Automobile Workers of America** empowered board of strategy to call strike in 69 General Motors plants in 14 States if company refused to negotiate with union; "sit-down" strikers continued to hold two Flint, Mich., Fisher Body plants in defiance of injunction.
- Jan. 4, 1937: **Nanking Gov't. unconditionally pardoned Gen. Chang Hsueh-liang,** previously sentenced to 10 years' imprisonment for kidnapping Gen. Chiang Kai-shek in Dec.
- Jan. 4, 1937: **U. S. Supreme Court unanimously overruled conviction** of Dirk de Jonge, a Communist, under the Oregon Criminal Syndicalism Law, on ground that his sentence abridged constitutional rights of freedom of speech and of assembly.
- Jan. 4, 1937: **Alfred P. Sloan, president of General Motors Corporation,** declared that the company would refuse to recognize any union as the only bargaining representative of labour.
- Jan. 5, 1937: **The 75th U. S. Congress convened;** Rep. William B. Bankhead Speaker of the House.
- Jan. 5, 1937: **A per capita debt of \$266.96 on Dec. 31, 1936,** was announced by the U. S. Treasury, in comparison with \$238.77 on Dec. 31, 1935, and \$12.36 on Mar. 17, 1917.
- Jan. 6, 1937: **Pres. Roosevelt, in message to Congress** on the "state of the Union," declared the Constitution adequate to meet modern needs without amendment but called upon courts for a more "enlightened" attitude in interpreting it. U. S. House and Senate passed Pittman-McReynolds resolution banning export of arms to Spanish Loyalists or Rebels. Embargo effective Jan. 8.
- Jan. 7, 1937: **Dr. Glenn Frank displaced as President** of the University of Wisconsin by an 8-7 vote of the Board of Regents.
- Jan. 7, 1937: **The Flint Alliance formed** by workers unsympathetic to the United Automobile Workers Union.
- Jan. 7, 1937: **Germany and Italy rejected Franco-British proposal** for immediate ban on foreign "volunteers" in Spanish armies; expressed willingness to support measure if all powers represented upon London Non-Intervention Committee agreed to it.
- Jan. 8, 1937: **Pres. Roosevelt, in his annual budget message to Congress,** forecast a conditionally balanced budget in the fiscal year 1938 and a completely balanced budget and a halting of the rise of the national debt at \$35,000,000,000 the following fiscal year.
- Jan. 8, 1937: **French Gov't. warned Spanish Rebels** that landing of German troops in Morocco violated Franco-Spanish pact of 1912; Germany denied Moroccan activity.
- Jan. 8, 1937: **Pres. Roosevelt authorized construction** of two 35,000-ton battleships following Japan's refusal to renew naval limitation treaties, which expired Dec. 31, 1936.
- Jan. 9, 1937: **Reich Gov't. announced conclusion** of German-Portuguese treaty, effective Dec. 18, 1936, under which Portugal agreed to restore German properties seized during World War.
- Jan. 10, 1937: **British Gov't. forbade enlistment** of its citizens in either Loyalist or Rebel Spanish armies and called upon other powers to take similar action.
- Jan. 11, 1937: **Chancellor Hitler and French Ambassador** to the Reich exchanged formal assurances that neither Germany nor France would disturb the status quo in Spain and Spanish Morocco.
- Jan. 11, 1937: **Battle between police and "sit-down" strikers** at Fisher Body plant in Flint, Mich., resulted in injuries to 28 persons.
- Jan. 11, 1937: **James M. Landis was appointed dean** of the Harvard Law school and resigned as chairman of the Securities and Exchange Commission, effective in summer of 1937.
- Jan. 12, 1937: **Pres. Roosevelt presented to Congress** his program for administrative reorganization; it called for two additional cabinet departments and for six executive assistants to the President, with all non-policy-determining offices placed under civil service.
- Jan. 12, 1937: **Foreign Sec'y. Anthony Eden in London address** declared Britain would, if driven, push rearmament program as hard as any nation, but that British preferred butter to guns and would strive unceasingly for world peace.
- Jan. 12, 1937: **The late Charles Hayden's will** provided \$50,000,000 for the establishment of a foundation to educate and assist boys and young men.
- Jan. 13, 1937: **U. S. State Dep't. warned Americans** serving as volunteers with either Spanish army that they faced fines and imprisonment and possible loss of citizenship.
- Jan. 14, 1937: **Col. Gen. Hermann Göring and Premier Mussolini** in Rome conference agreed that, pending effective non-intervention by all powers in Spanish war, Germany and Italy would rush support to Rebel forces.
- Jan. 14, 1937: **Canadian Parliament opened** with speech from the throne announcing conclusion of new five-year trade agreement between Britain and Canada.
- Jan. 15, 1937: **Gov. Frank Murphy of Mich.** arranged truce between General Motors Corp. and United Automobile Workers Union; "sit-down" strikers agreed to evacuate the plants during subsequent negotiations.
- Jan. 15, 1937: **French Chamber of Deputies unanimously** empowered Premier Blum's gov't. to bar French volunteers from Spanish armies when other powers agreed to similar measures.
- Jan. 16, 1937: **Non-striking automobile workers in Flint, Mich.,** requested conference with representatives of General Motors to discuss collective bargaining issue, as "sit-down" strikers began evacuation of occupied plants.
- Jan. 16, 1937: **Dr. Arthur E. Morgan,** chairman of the Tennessee Valley Authority, urged gov't. "co-operation" with utilities rather than a "finish fight." Senator Norris asked for legislation limiting the injunction power of courts because of their numerous anti-TVA writs.
- Jan. 17, 1937: **General Motors called off strike conference** to be held Jan. 18 when "sit-down" strikers refused to evacuate plants on ground that employers had violated terms of truce by agreeing to bargain with Flint Alliance; Gov. Murphy appealed to Sec'y. of Labor Perkins for mediation aid.
- Jan. 18, 1937: **Pres. Roosevelt appointed a committee** headed by Sec'y. of Interior Ickes to prepare legislation establishing a national policy on electric power.
- Jan. 19, 1937: **Howard Hughes established a world distance speed record** for land planes by averaging 332 miles an hour in 2,490-mile flight from Los Angeles to Newark, chiefly at an altitude of 14,000 feet, in 7 hours, 28 minutes and 25 seconds.
- Jan. 19, 1937: **Foreign Sec'y. Anthony Eden solemnly warned Germany** in Commons speech that she could decide Europe's future; promised British aid to Reich if Germany abandoned idea of national exclusiveness and co-operated fully with other powers in efforts to secure peace.



Jan. 20, 1937: **Franklin D. Roosevelt took the oath as President** of the U. S. for the second time in the first American inaugural to occur on any date save March 4. Reiterating his faith in adequacy of the Constitution without amendment to accomplish his program, he dedicated his second administration to securing a sufficiency for "those who have too little."

Jan. 20, 1937: **Conference between Sec'y. of Labor Perkins**, Gov. Murphy, and General Motor officials failed to break deadlock in automobile strike.

Jan. 21, 1937: **Foreign Minister Hachiro Arita**, speaking before Japanese Diet, urged colony-owning nations to adopt free trade policy toward nations lacking raw materials as an aid to world peace.

Jan. 21, 1937: **Automobile strike negotiations in Washington** temporarily ended when Alfred P. Sloan, president of General Motors, refused to continue discussion unless strikers evacuated plants.

Jan. 22, 1937: **Pres. Roosevelt, in reply to John L. Lewis's demand** that he support the automobile strikers "in every legal way," replied that "there come moments when statements, conversation and headlines are not in order."

Jan. 22, 1937: **Roswell Magill, Professor of Law at Columbia University**, was nominated by Pres. Roosevelt as Under-Secretary of the Treasury.

Jan. 23, 1937: **17 leading Russian Communists**, including Karl Radek, prominent journalist, and Gregory Piatakoff, former Assistant Commissar for Heavy Industry, were placed on trial in Moscow for participating in plot allegedly instigated by Lev Trotsky; they confessed plan to overthrow Soviet régime and assassinate its leaders.

Jan. 23, 1937: **Hirota Cabinet resigned in Japan** under pressure of Army leaders bent on establishing Fascist régime; on Feb. 2 Gen. Senjuro Hayashi, Army moderate, formed new ministry.

Jan. 24, 1937: **Premier Léon Blum, in speech at Lyons**, expressed France's willingness to help Germany solve her economic problems if assured that Reich would co-operate in securing world peace.

Jan. 24, 1937: **Bulgaria and Yugoslavia** signed treaty of friendship, ending long rivalry.

Jan. 25, 1937: **Atlantic and Gulf Coast maritime strike** ended after 11 weeks' unsuccessful effort to secure union recognition.

Jan. 26, 1937: **President Roosevelt termed Alfred P. Sloan's refusal** to take part in Washington strike negotiations until strikers evacuated plants as a "very unfortunate decision;" the following day Sec'y. of Labor Perkins requested Congress for a grant of power to subpoena records and witnesses in settling industrial disputes.

Jan. 27, 1937: **Seed Loan Bill, providing for loans** by Farm Credit Administration not to exceed \$400, passed by U. S. Senate without dissenting vote after debate on constitutionality.

Jan. 27, 1937: **League of Nations Council**

settled dispute between France, Syria, and Turkey over Alexandretta.

Jan. 28, 1937: **U. S. House of Representatives** passed Ramspeck Bill placing all postmasters under civil service rules.

Jan. 28, 1937: **Canada's "New Deal" legislation** on wages and hours, unemployment insurance, and marketing regulation, passed in 1934 and 1935 by the Bennett Gov't., was declared unconstitutional by the Privy Council's Judicial Committee in London, empire court of last resort.

Jan. 29, 1937: **Pres. Roosevelt indicated that he favoured** granting to Labor Dep't.'s conciliation service subpoena power in preliminary stages of labour disputes. A. F. of L. Pres. William Green opposed the granting of such power.

Jan. 29, 1937: **12 U. S. Navy planes completed hop** from San Diego to Honolulu in 21 hours and 43 minutes, the greatest non-stop ocean mass flight ever undertaken.

Jan. 30, 1937: **Chancellor Hitler, in Reichstag speech** commemorating National Socialism's fourth anniversary, repudiated "war guilt" clause of Versailles Treaty, demanded return of former German colonies, and declared that Reich was replacing "era of surprises" by one of international co-operation.

Jan. 30, 1937: **13 alleged Trotskyists on trial for treason** against the Soviet Gov't. were sentenced to death and executed on Feb. 1; 4 others, including Karl Radek and Gregory Sokolnikoff, former Ambassador to Great Britain, were given prison terms ranging up to 10 years.

Jan. 31, 1937: **Record floods in the Ohio Valley** began to recede after causing more than 400 deaths and property damage placed at \$550,000,000; approximately 671,000 persons were rendered homeless.

Feb. 1, 1937: **A National Guard regiment patrolled the area** surrounding Fisher Body and Chevrolet plants in Flint, Mich., after rioting resulted in minor injuries to some 20 persons; Gov. Murphy refused to invoke martial law.

Feb. 1, 1937: **Poland completed plans for fortification** of her German frontier with French aid.

Feb. 2, 1937: **French Chamber of Deputies, 405 to 186**, approved the Blum Gov't.'s defence program, doubling the 19,000,000,000 franc appropriation already voted for the current year, to match reported German 1936-37 defence expenditure of 12,600,000,000 marks.

Feb. 2, 1937: **Judge Paul V. Gadola of the Federal Circuit Court**, in sweeping injunction, ordered evacuation by "sit-down" strikers of two Fisher Body plants in Flint, Mich.; the order was defied by the men and never executed. John L. Lewis moved his headquarters from Washington to Detroit to assume active leadership of strike.

Feb. 3, 1937: **The 33rd International Eucharistic Congress** of the Roman Catholic Church opened in Manila.

Feb. 3, 1937: **Pres. Roosevelt submitted to Congress a report** of the National

Resources Committee, accompanied by recommendation for the adoption of a 6-year \$5,000,000,000 public works program, including flood-control projects.

Feb. 4, 1937: **40,000 seamen returned to work** at conclusion of the 98-day \$686,000,000 Pacific Coast strike, the most costly in U. S. maritime history; the men tentatively gained higher wages, union control of hiring agencies, better working conditions, and an 8-hour day.

Feb. 4, 1937: **Pres. Roosevelt informed disputants** in automobile strike, through Gov. Murphy, that he insisted upon a settlement. His intervention resulted in resumption of negotiations the following day.

Feb. 5, 1937: **Pres. Roosevelt startled the U. S.** by sending to Congress an unheralded message and bill seeking comprehensive reforms designed to "vitalize the courts." He asked for power to appoint a maximum of 6 additional Supreme Court Justices—one for each incumbent over 70 years of age who fails to retire—and up to 50 lower court justices.

Feb. 5, 1937: **Soviet Gov't. approved proposed international ban** on arms and volunteers for Spain, provided it participated in naval patrol to enforce measure.

Feb. 7, 1937: **William Green, president of the American Federation of Labor**, declared that 8,917,000 persons were unemployed in December, 1936, despite an increase in the number of employed persons in that month.

Feb. 7, 1937: **The Social Security Board** announced that over 22,000,000 applications for benefits were on file and that some 18,000,000 workers were covered by unemployment insurance laws of 35 States and the District of Columbia.

Feb. 8, 1937: **Malaga, Spain**, fell to Gen. Francisco Franco's Rebel forces.

Feb. 8, 1937: **Mayor Harold Bradshaw of Flint, Mich.**, was given dictatorial powers, following the City Commission's declaration that a state of emergency existed.

Feb. 8, 1937: **Sec'y. of Agriculture Wallace**, with Pres. Roosevelt's approval, advocated restoration in different form of the administration's original farm program, despite Supreme Court's adverse ruling.

Feb. 8, 1937: **Nanking Gov't. troops seized Sian**, capital of Shensi Province, without resistance, practically terminating the December rebellion.

Feb. 9, 1937: **Lev Trotsky offered to submit to arrest** by Soviet Gov't. if found guilty by impartial tribunal of alleged crimes.

Feb. 10, 1937: **Pres. Roosevelt, submitting to Congress** the report of his Great Plains Committee, advocated long-range program to fight drought in 10 States.

Feb. 11, 1937: **The 44-day automobile strike ended**, with General Motors Corporation announcing a \$25,000,000 wage increase. Terms of the agreement included: recognition of the United Automobile Workers as bargaining agent for its membership, no discrimination against



union members by company, union agreement to call off strike and evacuate plants and start of bargaining concerning working conditions.

Feb. 11, 1937: *Chancellor of Exchequer Neville Chamberlain* announced in British House of Commons gov't.'s decision to spend £400,000,000 for rearmament during next 5 years.

Feb. 12, 1937: *The German Reichsbank* was placed under Chancellor Hitler's direct control and the railways under that of the Transportation Minister, allegedly to end "foreign influences."

Feb. 13, 1937: *Charles Seymour, provost and professor of history*, was elected president of Yale, succeeding Dr. James Rowland Angell.

Feb. 13, 1937: *Martial law was declared in Anderson, Ind.*, by Gov. Townsend, after strike clash in which 10 persons were injured. John L. Lewis announced that unionization of the steel industry would be the next objective of the Committee for Industrial Organization.

Feb. 14, 1937: *135,000 members of the Amalgamated Clothing Workers* of America received a 12% rise in wages, amounting to \$30,000,000 annually, in a 3-year contract with clothing manufacturers.

Feb. 15, 1937: *Premier Senjuro Hayashi*, addressing first session of Diet since fall of Hirota Cabinet, announced a policy of non-aggression and invited China and the Soviet Union to establish more cordial relations with Japan.

Feb. 15, 1937: *Chancellor Hitler authorized a free election* of new General Synod of the German Evangelical Church, recognizing failure of efforts to co-ordinate German Protestantism with the Nazi régime.

Feb. 16, 1937: *London Non-Intervention Committee* agreed to prohibition against additional foreign volunteers in Spanish war, effective February 20 at midnight; naval patrols and frontier supervision were to enforce ban on entry into Spain of arms and volunteers, effective midnight on March 6.

Feb. 16, 1937: *Pres. Roosevelt submitted to Congress* the report of his Special Committee on Farm Tenancy, advocating a long-range Federal-State program to assist tenants toward ultimate ownership.

Feb. 16, 1937: *British Gov't. announced that in April* it would commence the most extensive and costly naval construction program ever launched in peace time.

Feb. 17, 1937: *Paul V. McNutt, former Gov. of Ind.*, named by Pres. Roosevelt as High Commissioner to the Philippines, succeeding Frank Murphy, present Gov. of Mich.

Feb. 18, 1937: *Pres. Roosevelt recommended to Congress* legislation to insure the 1938 wheat crop as the first step toward general crop insurance and storage of reserves.

Feb. 18, 1937: *Prime Minister Stanley Baldwin*, in House of Commons, stated Britain's intention to work for new regional

security pact in Western Europe to replace Locarno Treaty.

Feb. 19, 1937: *Kuomintang party convention* decided to terminate 10-year war on Chinese Communists in return for latter's agreement to submit to Nanking Gov't.'s supervision.

Feb. 19, 1937: *Marshal Rodolfo Graziani, Viceroy of Ethiopia*, and 2 other officials wounded by hand grenades thrown by Ethiopians in Addis Ababa. An army of 3,000 Ethiopians planning to attack the capital at the same time was reported virtually destroyed.

Feb. 21, 1937: *Col. Adam Koc announced formation* of a new Polish party with semi-Fascist program.

Feb. 22, 1937: *Arrival of German Foreign Minister in Vienna* marked by riots in which 28 Nazis were injured and 200 jailed.

Feb. 23, 1937: *Italian official sources estimated* that over 100 armed Ethiopian suspects in Addis Ababa bombing outrage had been executed.

Feb. 24, 1937: *Dr. Francis E. Townsend*, founder and leader of the Townsend Recovery Plan movement, convicted by a District of Columbia jury of contempt of U. S. House of Representatives for refusal in 1936 to testify before Congressional investigating committee.

Feb. 25, 1937: *Ras Desta Deltu, son-in-law of Emperor Haile Selassie of Ethiopia*, was captured and put to death by native troops under Italian command.

Feb. 25, 1937: *U. S. Senate, by 58-24 vote*, passed joint resolution, already approved by House, extending to June 12, 1940, President's power to negotiate trade pacts with foreign gov'ts.

Feb. 26, 1937: *Russia retired from international naval patrol* of Spanish coast after participating powers conceded her right to take part.

Feb. 26, 1937: *Premier Léon Blum won a 362-211 vote* of confidence in French Chamber of Deputies after an attack on his financial policy.

Feb. 27, 1937: *Pres. Roosevelt submitted to 48 State Governors* model law under which farmers' obedience to soil erosion control by local agencies would be made compulsory.

Mar. 1, 1937: *U. S. Supreme Court, in 5-4 decision*, upheld 1933 Congressional abrogation of gold payments as applied to rental contracts calling for payment in gold bullion.

Mar. 1, 1937: *The Carnegie-Illinois Steel Corp.*, world's largest producer of steel, began conference with Committee for Industrial Organization's Steel Workers Organizing Committee; independent steel companies simultaneously announced wage increases and hours reductions affecting some 150,000 workers.

Mar. 2, 1937: *General steel strike was averted* by agreement between the Carnegie-Illinois Steel Corp., and C. I. O. union, providing for union recognition, wage increase, and 40-hour week.

Mar. 3, 1937: *U. S. Senate, by a 63-6 vote*, adopted the Pittman resolution providing for strict neutrality and a minimum of discretion for the President in the event of foreign war.

Mar. 4, 1937: *Pres. Roosevelt, speaking at Washington* Democratic "victory dinner," tacitly demanded party's support for his Court plan; declared its continuation as majority party depended upon courage immediately to "lead the American people where they want to go."

Mar. 4, 1937: *British Labourites, under leadership of Herbert Morrison*, increased majority in London County Council elections for the ensuing 3 years from 14 to 26 seats.

Mar. 5, 1937: *Sec'y. of State Hull expressed U. S. regret* in reply to Reich Gov't.'s official protest at New York Mayor La Guardia's reference to Hitler as "brown-shirted fanatic." On Mar. 12 U. S. Gov't. officially protested subsequent German press attacks upon Mayor La Guardia, the U. S. Gov't. and American women.

Mar. 5, 1937: *"Big navy" advocates in U. S. House of Representatives* won signal victory when \$526,555,000 Naval Supply Bill was passed after defeat of efforts to cut appropriation.

Mar. 5, 1937: *French Gov't. terminated ban on gold* and promised balanced budget in effort to secure return to France of gold that had been sent abroad.

Mar. 5, 1937: *Russian Communist Party*, in accordance with new Constitution, decreed democratic secret ballot for lower party officials.

Mar. 6, 1937: *Firestone Tire and Rubber Co.* closed Akron (Ohio) plants after receiving demand for recognition of United Rubber Workers of America as sole collective bargaining agent for its 10,000 workers.

Mar. 6, 1937: *Australian referendum rejected* two constitutional amendments extending Federal powers over marketing and aviation.

Mar. 7, 1937: *Francisco Largo Caballero, Loyalist Premier of Spain*, emerged from cabinet crisis with united support of all Leftist political factions.

Mar. 8, 1937: *New wave of sit-down strikes* closed all major Detroit plants of Chrysler and Hudson automobile companies, affecting 60,000 workers. A. F. of L. announced drive to organize steel industry in opposition to C. I. O.

Mar. 8, 1937: *Naotake Sato, new Japanese Foreign Minister*, forecast moderation of Japan's policy in China in his first speech to House of Peers.

Mar. 8, 1937: *The "Mar Cantabrico" laden with aeroplanes and munitions* for Spanish Loyalists, was captured by Rebel cruiser in Bay of Biscay.

Mar. 9, 1937: *Pres. Roosevelt, in nationwide radio address*, declared his judiciary reform plan was designed to protect nation against usurpation of legislative functions by Supreme Court.

Mar. 9, 1937: *New York State Assembly rejected Child Labour Amendment*, 102 to



42, following attack on measure by Cardinal Hayes and Roman Catholic bishops of State.

Mar. 11, 1937: *Pres. Roosevelt left Washington* for 10-day vacation at Warm Springs, Ga.

Mar. 11, 1937: *Sir Samuel Hoare, British Admiralty chief*, told House of Commons Britain would defend all her possessions and trade routes but that naval rivalry with the U. S. was a thing of the past.

Mar. 12, 1937: *General Motors and United Automobile Workers of America* concluded final agreement for improved working conditions, and for settlement of future grievances without recourse to the sit-down strike.

Mar. 12, 1937: *U. S. Gov't. bonds declined sharply* in heaviest trading on N. Y. Stock Exchange in 16 years.

Mar. 12, 1937: *Mussolini, in inspection tour of Libya*, opened 1,250-mile highway to Egyptian border.

Mar. 13, 1937: *Offensive against Madrid by Italian troops* in Spanish Rebel service met crushing defeat at Brihuega, near Guadalajara.

Mar. 13, 1937: *French Gov't. expropriated Creusot works* of the Schneider armaments firm, the largest in France.

Mar. 15, 1937: *Circuit Court Judge Allan Campbell* of Detroit issued mandatory injunction for evacuation of Chrysler plants by sit-down strikers by Mar. 17.

Mar. 15, 1937: *Higher income and profits taxes* to balance budget and reduce public debt were urged by Marriner S. Eccles, chairman of Federal Reserve Board, to prevent monetary inflation.

Mar. 17, 1937: *6,000 sit-down strikers defied court injunction* ordering evacuation of eight Chrysler plants in Detroit; Gov. Murphy warned that State might have to use force to restore respect for courts and public authorities. Taxi strike in Chicago culminated in violent rioting in the Loop district. Five units of U. S. Steel Corp. contracted with C. I. O. unions for year of industrial peace.

Mar. 17, 1937: *Sec'y. of State Hull urged cessation* of "bitter and vituperative utterances in this country and Germany," following another Nazi protest against verbal attacks on Hitler by Mayor La Guardia of New York.

Mar. 18, 1937: *Gas explosion shattered the New London, Texas, high school building*, killing most of the 40 teachers and 700 children inside.

Mar. 18, 1937: *U. S. House adopted the McReynolds resolution*, giving the President discretionary powers to preserve American neutrality as opposed to mandatory provisions of Senate neutrality bill.

Mar. 18, 1937: *Pope Pius issued anti-Communist encyclical*, urging states "to prevent within their territories the ravages of the anti-God campaign."

Mar. 18, 1937: *Clarence A. Dykstra, City Manager of Cincinnati*, was elected Pres. of Univ. of Wisconsin, succeeding Dr. Glenn Frank.

Mar. 18, 1937: *Pres. Quezon of Philippine Commonwealth* in conference with Washington officials asked complete independence for Philippines in 1938 or 1939 instead of on scheduled date in 1946.

Mar. 19, 1937: *Court order for arrest of 6,000 sit-down strikers* occupying Chrysler plants in Detroit in defiance of injunction was disregarded by sheriff, who said his force of deputies was insufficient. Sit-down strikers were assailed and defended in Congress.

Mar. 20, 1937: *Pres. Homer Martin of United Automobile Workers of America* defied Gov. Murphy to use National Guard to oust sit-down strikers in Chrysler plants; general strike in Detroit was threatened. Wave of sit-down strikes was sweeping Michigan, Indiana and Illinois.

Mar. 20, 1937: *Italian troops with Spanish Rebels* were reported as flying in panic before Loyalist drive in Guadalajara sector, leaving behind many prisoners and huge stores of munitions.

Mar. 20, 1937: *Amelia Earhart's round-the-world flight* was prematurely ended when plane was damaged during attempted take-off from Honolulu airport.

Mar. 21, 1937: *Pope Pius in encyclical read from Berlin pulpits* declared church would defeat all efforts to substitute modern ideologies for Christian faith; he attacked Nazis for alleged violations of concordat.

Mar. 21, 1937: *Clash between Nationalist demonstrators and police* in Ponce, Porto Rico, cost seven or more lives; over 50 were injured.

Mar. 22, 1937: *Chief Justice Hughes*, with assent of Justices Brandeis and Van Devanter, opposed Pres. Roosevelt's proposal to increase size of Supreme Court in letter read before Senate Judiciary Committee. Former Supreme Court Justice John Hessin Clarke, in nation-wide radio address, said the President's court reform plan was "clearly constitutional."

Mar. 22, 1937: *French liner "Normandie" set new eastward trans-Atlantic crossing* record of 4 days, 6 minutes, 23 seconds for 2,967 miles from Ambrose Light to Bishop's Rock, an average of 30.99 knots per hour.

Mar. 23, 1937: *Gov. Murphy of Mich.* called Walter P. Chrysler and John L. Lewis into joint conference on tie-up of Chrysler plants, as 50,000 Detroit workers held mass demonstration against police evictions of sit-down strikers in other factories.

Mar. 23, 1937: *Reich Gov't. appointed Dr. Hans Heinrich Dieckhoff*, Under-Sec'y. of German Foreign Office, as ambassador to U. S., succeeding Dr. Hans Luther.

Mar. 23, 1937: *With March income-tax payments* about \$150,000,000 below estimates, U. S. Treasury indicated that deficit in 1936-37 and 1937-38 budgets would be greater than anticipated.

Mar. 24, 1937: *French Foreign Minister warned Britain and Germany* that France would not stand for further direct Italian aid to Spanish rebels in violation of non-intervention agreement of Feb. 20.

## CALENDAR OF EVENTS

Mar. 24, 1937: *Sen. Borah introduced new Child Labour Amendment* to Constitution, applying only to children of 14 years or less.

Mar. 25, 1937: *Detroit sit-down strikers* evacuated Chrysler plants on order from John L. Lewis, C. I. O. chairman, after Walter P. Chrysler on Mar. 24 agreed not to resume production or move machinery during collective bargaining negotiations.

Mar. 25, 1937: *Seven labour leaders and lawyers* were found guilty in restaurant racket trial by New York city jury.

Mar. 25, 1937: *Italy and Yugoslavia ended their long hostility* with five-year pact guaranteeing their mutual frontiers and status quo in Adriatic.

Mar. 26, 1937: *Attacks upon Italy in British House of Commons* produced new wave of intense anti-British feeling among Italians, spurred on by gov't. press.

Mar. 26, 1937: *Crushing Rebel drive on Pozoblanco*, key to important mercury mines at Almaden, Loyalists launched offensive toward Cordoba and gained much ground in subsequent fighting.

Mar. 27, 1937: *Governors of Ala., Ga., La., and S. C.* broadcast joint endorsement of President's court reform plan.

Mar. 27, 1937: *WPA report declared national production* 20 per cent higher than in 1929 would be required to reduce U. S. unemployment to 1929 level.

Mar. 28, 1937: *William Green, pres. of A. F. of L.*, declared sit-down strike was illegal and its use "detrimental to labour's interests." On Mar. 29 John L. Lewis termed Green's statement "characteristically cowardly and contemptible."

Mar. 28, 1937: *Pope Pius, making first public appearance* since he became ill in Dec., was cheered by 250,000 people in St. Peter's cathedral and square.

Mar. 29, 1937: *U. S. Supreme Court, by 5 to 4 decision*, upheld Washington State minimum wage law, reversing its decision of previous June on similar New York State law. Court also upheld unanimously Frazier-Lemke Farm Mortgage Moratorium Law and sections of Railway Labor Act requiring railroads to bargain collectively with their employees.

Mar. 30, 1937: *Pan American Clipper*, surveying 7,000-mile commercial air route between U. S. and Australasia, arrived at Auckland, New Zealand; stops were made en route at Hawaii, Kingman Reef, and American Samoa.

Mar. 30, 1937: *Lord Tweedsmuir, Gov.-Gen. of Canada*, arrived in Washington with Lady Tweedsmuir for two-day visit at White House. On Apr. 1 he addressed U. S. Senate and House.

Mar. 30, 1937: *Soviet Gov't., alarmed by industrial production slump*, ordered 20 per cent increase in output over preceding year.

Mar. 31, 1937: *Japanese Diet was dissolved* and new elections ordered.

Mar. 31, 1937: *Rejecting Pres. Roosevelt's personal appeal*, House Agriculture Com-

mittee emasculated bill to finance purchase of land by farm tenants.

Apr. 1, 1937: *New Constitution for India* went into effect with inauguration of provincial autonomy, despite non-cooperation of Indian Nationalists.

Apr. 1, 1937: *General Motors Chevrolet plant* in Flint was closed by walkout, raising total of idle automobile workers in Mich. to 120,000. Move in U. S. Senate to condemn sit-down strikes provoked sharp debate.

Apr. 2, 1937: *Two-year agreement* between United Mine Workers and operators for wage increase of \$85,000,000 a year to 300,000 miners ended one-day stoppage of coal mining in Appalachian area.

Apr. 2, 1937: *Basque Nationalists were driven back* by Rebel drive on Bilbao; Loyalists gained on Madrid and Cordoba fronts; Cordoba was bombed with fleet of new Russian planes.

Apr. 2, 1937: *Pres. Roosevelt announced gov't.* would curtail purchases of durable goods to curb high price trend in steel, copper and other basic products.

Apr. 3, 1937: *Major Gen. Edward M. Markham*, Chief of Army Engineers, formally recommended completion of \$197,921,000 Florida ship canal.

Apr. 3, 1937: *Henry G. Yagoda*, former acting chief of Ogpu, dismissed as Soviet Commissar of Communications for "criminal activities."

Apr. 4, 1937: *U. S. Federal Reserve Board announced it would buy Federal securities* on open market for account of Reserve Banks to protect gov't. bond market and extend easy-money policy.

Apr. 5, 1937: *U. S. Senate passed Guffey-Vinson Coal Bill*, after rejecting, 48 to 36, an amendment declaring sit-down strikes "illegal and contrary to public policy."

Apr. 5, 1937: *Sec'y. of State Hull in New York speech* said world armament race could lead only to military explosion or economic collapse; urged concerted effort for Wilsonian type of economic peace.

Apr. 6, 1937: *Chrysler automobile strike settled* by Walter P. Chrysler and John L. Lewis after 30-day tie-up, estimated to have cost \$87,000,000. New sit-downs closed three General Motors plants. Vermont legislature outlawed sit-down strikes.

Apr. 7, 1937: *Mob of Central Pennsylvania farmers* ejected several hundred sit-down strikers from Hershey chocolate plant at Hershey, Pa. U. S. Senate passed, 75 to 3, resolution condemning sit-down strikes as illegal and declaring industrial spy system, denial of collective bargaining and other unfair labour practices "contrary to sound public policy."

Apr. 8, 1937: *U. S. House, 236 to 149*, defeated proposed inquiry into sit-down strikes. Premier Hepburn of Ontario declared war on Committee for Industrial Organization, after strike of affiliated automobile workers tied up General Motors plant at Oshawa, Canada.

Apr. 10, 1937: *Premier Hepburn of Ontario* refused to deal with Hugh Thompson

of Detroit, United Automobile Workers' representative, "or any other paid, foreign C. I. O. agitator" and negotiations for settlement of strike in General Motors Oshawa plant collapsed.

Apr. 10, 1937: *Italian Gov't. extended partial self-rule* to Muslims of Libya; appropriated 85,000,000 lire for naval base at Assab, dominating southern entrance to Red sea.

Apr. 10, 1937: *Prime Minister Stanley Baldwin*, announcing his impending retirement, warned Britain against fascism and communism.

Apr. 11, 1937: *Premier Van Zeeland of Belgium* won striking victory over Rexists (Fascists) in Brussels election, following denunciation of Rexist movement by Cardinal Van Roey, Roman Catholic Primate.

Apr. 11, 1937: *London Cabinet, modifying Britain's traditional maritime policy*, ordered British merchant vessels bound for Bilbao, Spain, with food not to run Spanish Rebels' blockade.

Apr. 11, 1937: *Clash of rival miners' unions* led to shooting of 11 persons in Galena, Kan.

Apr. 12, 1937: *U. S. Supreme Court*, in four momentous 5 to 4 decisions upholding National Labor Relations (Wagner) Act, ruled that Congress had power to regulate industries organized on national scale even if their products were locally manufactured; labour's right to organize in unions and bargain collectively with large industries was affirmed.

Apr. 12, 1937: *Foreign Sec'y. Anthony Eden* defended Britain's policy of non-intervention and non-involvement in Spanish civil war; predicted conflict would end in stalemate and "peace without victory."

Apr. 13, 1937: *Pres. Roosevelt ordered re-survey* of Federal expenditure requirements in view of adverse budget trend.

Apr. 14, 1937: *Premier Hepburn of Ontario* forced resignation of two members of his Cabinet for opposing his fight against C. I. O. in General Motors Oshawa plant strike. On Apr. 15 United Automobile Workers of America agreed to settlement of Oshawa strike on "Canadian" basis.

Apr. 14, 1937: *British House of Commons rejected Labour motion* censuring gov't.'s Spanish policy.

Apr. 14, 1937: *Chrysler Corp. and United Automobile Workers of America* signed supplementary pact on handling collective bargaining, grievances, and seniority issues.

Apr. 15, 1937: *U. S. House passed Gavagan Anti-Lynching Bill*, 277 to 118, over protests of Southern members.

Apr. 15, 1937: *Reversing previous position*, Italy expressed willingness to discuss withdrawal of all foreigners fighting on both sides in Spain's civil war.

Apr. 16, 1937: *Premier Paul Van Zeeland of Belgium* announced that he would visit Pres. Roosevelt at Washington in

June in furtherance of move to reduce world trade barriers.

Apr. 16, 1937: *U. S. Circuit Court of Appeals at Boston* declared unconstitutional the unemployment insurance and old-age assistance provisions of Social Security Act.

Apr. 18, 1937: *French Socialist party convention* at Puteaux upheld Premier Blum; voted dissolution of radical faction demanding intervention on side of Spanish Loyalists.

Apr. 18, 1937: *Furthering Chinese unity against Japan*, the formerly dissident Kwangsi war lords joined with Nanking leaders in forming new national defence council.

Apr. 19, 1937: *German Gov't. expressed willingness* to attend international conference on economic co-operation and armament limitation.

Apr. 19, 1937: *International patrol of Spanish coasts* to bar foreign war supplies and "volunteers" went into effect at midnight.

Apr. 20, 1937: *Pres. Roosevelt in message to Congress* estimated deficit for fiscal year 1937 at \$2,557,000,000; asked \$1,500,000,000 appropriation for relief and work-relief in 1938 fiscal year.

Apr. 20, 1937: *British Chancellor of the Exchequer* announced rise in basic income tax rate to 25 per cent and growth-of-profits tax of 33½ per cent to help finance Britain's rearmament.

Apr. 21, 1937: *Maine National Guard was called out* to curb violence in 28-day C. I. O. shoe strike in Lewiston-Auburn area.

Apr. 21, 1937: *Ten-day Rebel bombardment of Madrid* had killed 200 civilians.

Apr. 22, 1937: *Agreement ending strike in General Motors plant* at Oshawa, Ontario, was signed in Premier Hepburn's office.

Apr. 22, 1937: *Premier Mussolini refused Italian support* for restoration of Habsburgs in Austria in conference with Chancellor Schuschnigg at Venice.

Apr. 23, 1937: *Riot of cannery strikers in Stockton, Calif.*, caused injuries to 50 persons. Sit-down strike of 1,200 workers closed Ford Motor Co. plant at Richmond, Calif.

Apr. 23, 1937: *Three British food ships ran Rebel blockade* of Bilbao, Spain; they were protected when outside territorial waters by battle cruiser "Hood."

Apr. 23, 1937: *U. S. Gov't. filed suit in New York* for dissolution as a trust of \$174,000,000 Aluminum Co. of America, controlled by former Sec'y. of Treasury Andrew W. Mellon and associates.

Apr. 24, 1937: *Independent Automobile Employees Ass'n.* was formed at Flint, Mich., to combat C. I. O. activities and establish separate collective bargaining agency.

Apr. 24, 1937: *Assembly of 33 civilians* took over the civil gov't. of Madrid on orders from Premier Largo Caballero.



- Apr. 24, 1937: *Joint Anglo-French note to Belgian Foreign Minister* freed Belgium of its obligations under Locarno Treaty, while continuing the Anglo-French guarantee of Belgian neutrality.
- Apr. 25, 1937: *Strongly fortified peaks guarding road* to Bilbao were captured by Spanish Rebels. On following day Durango, key to Basque capital, and Eibar were occupied and Guernica, ancient Basque capital, was destroyed by terrific 3½-hour aerial bombardment.
- Apr. 26, 1937: *Tie-up of railway operations* in New York city and vicinity averted through intervention of Pres. Roosevelt under Labor Railway Act; board to investigate dispute appointed.
- Apr. 26, 1937: *Premier T. D. Patullo of British Columbia* announced agreement with Dominion Gov't. for incorporation of Yukon Territory in Province.
- Apr. 26, 1937: *U. S. Supreme Court by 5 to 4 decision* nullified 17- to 20-year prison sentence passed by Georgia court on Angelo Herndon, Negro Communist, as violating guarantees of liberty in Fourteenth Amendment.
- Apr. 26, 1937: *Prime Minister Baldwin* announced that Britain would nationalize coal royalties, paying owners £66,450,000, as first step toward rehabilitation of coal-mining industry.
- Apr. 28, 1937: *French Gov't. proposed nationalization* of private railways and unification of all lines to end chronic operating deficits.
- Apr. 29, 1937: *Compromise neutrality bill* was rushed through both houses of Congress to replace temporary legislation due to expire at midnight of May 1; gave President discretionary powers.
- Apr. 29, 1937: *Basques retreated to last line* of Bilbao's defenses; 32 Loyalist planes arrived from Valencia to aid them.
- Apr. 29, 1937: *Nazi Gov't. launched new attack on Catholic Church*, announcing mass trials of more than 1,000 priests, monks and lay brothers on immorality charges.
- Apr. 30, 1937: *Rebel battleship "España" was sunk* by mine or Loyalist aerial bombs off Santander, Spain, while pursuing British merchant ship running Rebel blockade.
- Apr. 30, 1937: *Elections to Japanese Diet* showed heavy gains for labour and other anti-militarist parties.
- Apr. 30, 1937: *Pres. Eamon de Valera's draft* of new Constitution was published and plebiscite on it was called for in June.
- Apr. 30, 1937: *Agreement for termination of capitulations* in Egypt in 1939 reached at international conference at Montreux, Switzerland.
- May 1, 1937: *Chancellor Hitler defied anti-Nazi religious groups* and Pope in May Day speech to German labour; demanded exclusive Nazi control over youth.
- May 1, 1937: *Soviet military preparedness* demonstrated in Red Army's May Day parade in Moscow.
- May 2, 1937: *U. S. Labor Dept.* estimated 8,241,000 increase in employment since Mar., 1933, low point of depression.
- May 2, 1937: *Works Progress Administrator Hopkins* announced that State and local relief and work-relief expenditures were \$1,244,953,000 in 1936 against \$338,793,000 in 1933.
- May 3, 1937: *Pulitzer Prizes for 1937* were awarded to Margaret Mitchell for *Gone With the Wind* (novel); George S. Kaufman and Moss Hart for *You Can't Take It With You* (play); Van Wyck Brooks for *Flowering of New England* (history); Allan Nevins for *Hamilton Fish, the Inner History of the Grant Administration* (biography); Robert Frost for *A Further Range* (poetry).
- May 3, 1937: *A final divorce decree* was awarded Mrs. Wallis Warfield Simpson in London; the Duke of Windsor immediately left Austria and joined her May 4 at Château de Candé near Tours, France.
- May 4, 1937: *Anarchist revolt against Catalan Gov't.* broke out in Barcelona; it was crushed after considerable fighting.
- May 4, 1937: *Premier Mussolini and Foreign Minister von Neurath* of Germany, meeting in Rome, planned closer Italo-German collaboration and development of mid-European bloc of Fascist states.
- May 5, 1937: *Mexican Supreme Court* declared unconstitutional Chihuahua law permitting only one priest in entire State.
- May 5, 1937: *Prime Minister Baldwin* appealed for industrial peace in his last speech in House of Commons.
- May 6, 1937: *\$10,000,000 Mellon Institute of Industrial Research* dedicated by Andrew W. Mellon at Pittsburgh.
- May 6, 1937: *The Zeppelin "Hindenburg" crashed in flames* at Lakehurst, N. J., at completion of trans-Atlantic voyage, killing 36 and injuring 30 of the 97 passengers and crew members.
- May 8, 1937: *Mussolini recalled all Italian journalists in London* and barred all except three British newspapers from Italy.
- May 8, 1937: *Basque Gov't. mobilized* three additional army and navy classes as Rebel pressure against Bilbao increased.
- May 9, 1937: *Italy celebrated first anniversary* of proclamation of Italian Empire with great military review in Rome.
- May 10, 1937: *On eve of coronation*, George VI of Britain issued long honours list and dined 400 royal visitors, ambassadors and nobles at state banquet.
- May 11, 1937: *Prime Ministers of five Dominions* presented "loyal addresses" to George VI at Buckingham Palace ceremonies; the King pledged himself to carry on his father's work for the British empire; in Dublin Republican demonstrators clashed with the police.
- May 12, 1937: *George VI was crowned King and Emperor* in Westminster Abbey; rode in state through cheering throngs, and made a radio address to the people of the empire, promising to serve them faithfully.
- May 12, 1937: *Two plants of Jones & Laughlin Steel Corp.* were closed by C. I. O. strike in Pittsburgh.
- May 12, 1937: *Spanish Loyalists were reported repulsed* in heavy attack on Toledo.
- May 13, 1937: *Floating mine disabled British destroyer "Hunter"* off southern coast of Spain; three sailors were killed, four missing, and a score injured by explosion.
- May 14, 1937: *Pres. Roosevelt returned to Washington* from fishing trip in Gulf of Mexico; renewed drive for his court reorganization bill and for broad Federal action to raise social standards.
- May 14, 1937: *Federal Circuit Court of Appeals at Covington, Ky.,* dissolved temporary injunction against TVA power program granted to 19 private utilities on Dec. 14.
- May 14, 1937: *Imperial Conference* opened in London.
- May 14, 1937: *Henry T. Merrill and John S. Lambie, Jr.,* completed first commercial round-trip plane flight over North Atlantic, landing at New York city from Liverpool, England, with coronation pictures five days after take-off from New York.
- May 15, 1937: *Loyalist Cabinet at Valencia, Spain,* resigned; more moderate ministry formed May 17 by Dr. Juan Negrin, Socialist and former Finance Minister.
- May 15, 1937: *Silver Jubilee of Christian X of Denmark* celebrated at Copenhagen, with kings of Norway and Sweden in attendance.
- May 16, 1937: *Four high officials of Soviet Central Trade Union Council* arrested for malfeasance and "Trotskyism"; all except one member of Council's secretariat dismissed. On May 17 Kremlin decree established supreme military councils to control army commanders.
- May 17, 1937: *U. S. Supreme Court, 4 to 3,* upheld Louisiana tax on chain stores based on total number of stores in each chain system.
- May 17, 1937: *U. S. Commerce Dep't.* banned as unsafe New York-Paris air race organized by French Gov't. to commemorate tenth anniversary of Col. Chas. A. Lindbergh's flight.
- May 18, 1937: *U. S. Supreme Court Justice Willis Van Devanter,* known for his conservative and anti-New Deal decisions, resigned, effective June 2; Senate Judiciary Committee, 10 to 8, voted adverse report on Pres. Roosevelt's court reorganization measure.
- May 19, 1937: *Electric power strike* paralyzed Saginaw valley (Mich.) industrial region until ended on demand of Gov. Frank Murphy.
- May 19, 1937: *Reich press and radio bitterly attacked* Cardinal Mundelein of Chicago, who charged that immorality

# CALENDAR OF EVENTS

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trials of numerous monks in Germany were merely anti-Catholic propaganda. On May 20 German ambassador protested to U. S. State Dep't. against Cardinal's remarks.

May 20, 1937: **27,000 employees of Jones & Laughlin Steel Corp.** voted 2 to 1 in favour of C. I. O. affiliate as their collective bargaining agent.

May 20, 1937: **George VI's coronation review** of more than 300 British warships took place at Spithead.

May 20, 1937: **Execution at Svobodni, Siberia**, of 44 Soviet citizens for espionage and sabotage on behalf of Japanese, reported in Moscow.

May 21, 1937: **Soviet aeroplane, landing at North Pole**, established permanent weather station there in preparation for regular polar airline to United States. On May 22 Soviet Gov't. claimed North Pole as its permanent possession. On May 26 three more Soviet planes reached Pole from Rudolph Island.

May 22, 1937: **Vatican newspaper Osservatore Romano** reported confiscation by Nazis of 18 German Catholic printing plants that printed Pope's Easter anti-Nazi encyclical.

May 22, 1937: **Soviet Gov't. reported execution** of more than 20 anti-Stalin conspirators in Tiflis, Georgia.

May 23, 1937: **Lev Trotsky announced** that his "Fourth International" had enrolled thousands of members in 30 countries; predicted it would overthrow Stalin régime in Russia and bring about world revolution.

May 24, 1937: **Social Security Act upheld** in three historic decisions of U. S. Supreme Court. On same day Pres. Roosevelt urged Congress to "extend the frontiers of social progress" by passing bill establishing maximum hours and minimum wages and abolishing child labour.

May 24, 1937: **International Exposition at Paris** opened by Pres. Lebrun of France.

May 25, 1937: **American Federation of Labor** conference at Cincinnati declared war to finish on Lewis's Committee for Industrial Organization; decided to charter unions in mining and other C. I. O. fields and to double per capita union tax to raise war chest.

May 25, 1937: **Mussolini's Milan newspaper** ordered Italian Jews to support fascism wholeheartedly or leave the country.

May 26, 1937: **C. I. O. leader and 15 assistants** were beaten up in first attempt to organize employees of Ford Motor Co. at Detroit. C. I. O. strike of 75,000 employees of 27 steel plants in five States went into effect.

May 26, 1937: **Netherlanders approved Premier Colijn's policies** and rebuffed Dutch Nazi movement in elections to States-General.

May 26, 1937: **Egypt was admitted as 59th member** of League of Nations.

May 27, 1937: **3,000,000 tons of rain-washed mine tailings** burst upon sleep-

ing town of Talpujahua, Mex., killing about 100 inhabitants.

May 27, 1937: **Spanish Loyalist White Book** supporting charges of Italian aggression submitted to League of Nations Council with demand for action.

May 28, 1937: **Propaganda Minister Goebbels** in speech indicated death struggle between Nazi State and Catholic Church was at hand; German ambassador to Vatican was withdrawn June 1.

May 28, 1937: **Neville Chamberlain succeeded Stanley Baldwin** as British Prime Minister; Cabinet reorganized.

May 29, 1937: **Spanish Loyalist planes** bombed German pocket battleship "Deutschland" in Iviza harbour, Balearic Islands, killing 23 and wounding 83 members of crew. Insurgent air raid on Barcelona killed 70 persons, following air bombardment of Loyalist provisional capital at Valencia, with 200 deaths, the previous day.

May 29, 1937: **Social-Democratic Federation convention** at Pittsburgh urged union of democratic Socialists, organized labour, and progressives in third party for 1940 Presidential campaign.

May 30, 1937: **Four persons were killed**, six fatally wounded, and 125 injured in clash between police and C. I. O. steel strikers at Republic Steel Corp. plant in South Chicago.

May 31, 1937: **German warships bombarded Almeria, Spain**, killing 20 or more and wounding 100 persons, in reprisal for Loyalist bombing of battleship "Deutschland." Germany and Italy withdrew from London Non-Intervention Committee and from patrol of Spanish coasts.

May 31, 1937: **Hayashi Cabinet resigned** in Japan.

June 1, 1937: **Pres. Roosevelt urged Congress** to legislate against evasion of taxes "by a minority of very rich individuals." Senate immediately took steps for joint Congressional investigation.

June 2, 1937: **Marshal Werner von Blomberg**, German War Minister, arrived in Rome to inspect Italy's armed forces; European tension over Spain eased.

June 2, 1937: **Five more Catholic monks and lay brothers** sentenced at Coblenz, Germany, after confessing to sexual crimes; 915 were in custody, of whom 215 had been indicted on similar charges.

June 3, 1937: **Duke of Windsor and Mrs. Wallis Warfield** (formerly Simpson) were married at Château de Cande, Monts, France, by Mayor of Monts, performing civil ceremony, and by the Rev. R. Anderson Jardine, vicar of St. Paul's Church, Darlington, England.

June 3, 1937: **Gen. Emilio Mola**, Spanish Rebel commander directing drive against Bilbao, was killed in aeroplane crash.

June 3, 1937: **Bills for establishment of seven national planning agencies** similar to Tennessee Valley Authority introduced in Congress.

June 3, 1937: **Prince Fumimaro Konoye** formed national union cabinet in Japan.

June 6, 1937: **Clashes between Hitler Youth and Catholic Youth** organizations in Munich, Germany, were followed by arrest of 10 Catholic priests.

June 7, 1937: **Plans for merging Britain's** 626 public and private electricity-supplying enterprises in 30 regional organizations were announced by Prime Minister Neville Chamberlain.

June 8, 1937: **American Medical Ass'n.** approved birth control as having a definite place in medical practice.

June 8, 1937: **The longest total eclipse** of modern times—7 min. 2 sec. at its maximum point, 1,000 miles south-west of Honolulu—was studied by scientists at sea, on land, and in air.

June 9, 1937: **Business and industry in three large cities** and nearly 200 smaller communities of Saginaw valley, Mich., were paralyzed for 15 hours when a handful of striking C. I. O. power employees rejected settlement approved by their own representatives in Washington and pulled the power switches.

June 11, 1937: **U. S. House voted** to extend "nuisance" taxes for two years.

June 11, 1937: **Soviet military court condemned to death** on charges of treason Marshal Mikhail N. Tukhachevsky, considered Red Army's ablest strategist and most popular leader, and seven other important generals; sentences executed June 12.

June 13, 1937: **Dep't. of Commerce** reported U. S. national income for 1936 at \$63,800,000,000 against \$55,000,000,000 in 1935.

June 14, 1937: **U. S. Senate Judiciary Committee's** report denounced Roosevelt court reorganization bill as "a needless, futile, and utterly dangerous abandonment of constitutional principle."

June 14, 1937: **Dail Eireann was dissolved** after approving Pres. Eamon de Valera's new draft Constitution for Irish Free State; general election called for July 1.

June 16, 1937: **Soviet Union's greatest political purge** claimed new victims; Pres. A. G. Cherviakoff of White Russian S. S. R. committed suicide after arrest of 45 colleagues for treason.

June 17, 1937: **Sec'y. of Labor Perkins** on Pres. Roosevelt's instructions named Federal Steel Mediation Board headed by Chas. P. Taft 2d to settle strikes affecting 70,000 workers.

June 17, 1937: **Basque Gov't. fled from Bilbao** before advancing Spanish Rebels.

June 18, 1937: **U. S. Treasury Dep't.** named Jules Bache, Jacob Schick, Charles Laughton and 4 others as having employed foreign corporations and other devices to reduce or avoid income taxes.

June 19, 1937: **Gov. Earle of Pa. declared martial law** in Johnstown steel strike area; ordered Bethlehem Steel Corp. to close Cambria plant. In Youngstown, O., strikers and police clashed at Republic Steel Corp. plant; one killed, 11 injured.



- June 19, 1937: *Spanish Rebels captured Bilbao* after 9-month siege; Basque Nationalists withdrew to Santander.
- June 19, 1937: *Reich Gov't. decreed suppression* of 11 private monastery schools and secularization of 966 Catholic public schools in Bavaria.
- June 20, 1937: *After transpolar flight from Moscow*, three Russian fliers landed plane at Vancouver, Wash.; covered 5,288 miles in 63 hours, 17 minutes.
- June 20, 1937: *Seven German climbers* and 9 (Gurkha) porters killed by avalanche while attempting to scale Nanga Parbat in Himalayas, according to news reaching Simla, India.
- June 21, 1937: *Blum Cabinet resigned* when French Senate refused to grant it emergency financial powers.
- June 21, 1937: *Pres. Roosevelt urged heads* of Republic Steel Corp. and Youngstown Sheet and Tube Co. not to reopen Youngstown, O., plants following failure of Federal Steel Mediation Board's efforts to settle C. I. O. strike. On June 22 Gov. Davey declared martial law in Youngstown area and forbade reopening of plants.
- June 21, 1937: *Sit-down strike held "unlawful and criminal"* in decision of U. S. Circuit Court of Appeals at Philadelphia.
- June 22, 1937: *Camille Chautemps, Radical Socialist*, formed new French Popular Front Cabinet including ex-Premier Léon Blum.
- June 22, 1937: *Joe Louis, negro boxer*, won world's heavyweight championship by knocking out James J. Braddock, the titleholder, in 8th round of scheduled 15-round bout at Comiskey Park, Chicago.
- June 23, 1937: *C. I. O. "labour holiday"* called in Warren and Niles, O., in protest against court injunction restraining strike pickets, made 14,000 workers idle.
- June 23, 1937: *Germany and Italy again withdrew their warships* from four-power patrol of Spanish coasts after disagreement with Britain and France over action on alleged Spanish Loyalist attempt to torpedo German cruiser "Leipzig."
- June 23, 1937: *\$10,000,000 gift from Starling W. Childs* for cancer research fund announced by Yale university.
- June 24, 1937: *U. S. Treasury published names* of 67 wealthy taxpayers who "avoided paying their full share of taxes" by transferring personal assets to corporations.
- June 25, 1937: *Prime Minister Chamberlain* of Britain in House of Commons speech appealed to European Gov'ts. to avoid war; said situation was "serious but not hopeless."
- June 25, 1937: *Mexico decreed state control* over agricultural production, prices of farm products and foreign trade in them.
- June 25, 1937: *Youngstown, O., steel mills* of Republic Steel Corp. and Youngstown Sheet & Tube Co., reopened under protection of troops after being closed for month by C. I. O. strike.
- June 26, 1937: *Mussolini indicated Italy* would back Spanish Insurgents with men and material until they won civil war.
- June 26, 1937: *National Labor Relations Board* charged Ford Motor Co. with sponsoring "malicious and brutal assaults" on organizers for United Automobile Workers.
- June 27, 1937: *Policy of progressive reduction* of state contributions to Catholic and Protestant Churches announced by Bavaria's Nazi Minister of Interior.
- June 29, 1937: *French Gov't. closed Paris Bourse* and suspended gold and foreign exchange payments. On June 30 Parliament gave cabinet full powers to Aug. 31 to deal with financial crisis.
- June 30, 1937: *Strike truce permitting re-opening* of Inland Steel Co. mills at East Chicago, Ind., arranged by Gov. Clifford Townsend.
- July 1, 1937: *The Rev. Martin Niemöller*, Berlin pastor who led fight against Nazi domination of German Protestantism, arrested and held for trial.
- July 1, 1937: *Irish Free State voters* approved new Constitution; returned Pres. Eamon de Valera's party to power.
- July 2, 1937: *Amelia Earhart and her navigator, Fred J. Noonan*, were forced down and lost in Pacific Ocean near Howland Island in flight from Lae, New Guinea.
- July 2, 1937: *Substitute court reorganization bill* introduced in U. S. Senate by Roosevelt forces; provided for appointment of one Supreme Court Justice each year for each incumbent over 75 years old who refused to retire.
- July 3, 1937: *Foreign Minister Eden* declared Britain was determined to maintain territorial integrity of Spain.
- July 5, 1937: *Pres. Roosevelt in letter to Institute of Public Affairs* at Univ. of Va. declared war abroad would impair welfare of U. S. and bring world-wide disaster.
- July 6, 1937: *Trans-Atlantic air line* linking U. S. and Canada with Irish Free State and Britain was surveyed when Imperial Airways and Pan American Airways planes landed almost simultaneously at Botwood, N. F., and Foynes, Irish Free State, respectively, after passing in mid-ocean.
- July 6, 1937: *Spanish Loyalists launched offensive* to end siege of Madrid; in succeeding days drove deep salient into Rebel lines north-west of capital.
- July 7, 1937: *Partition of Palestine* into independent Jewish and Arab states, with Britain retaining mandate over Jerusalem, Bethlehem and corridor to sea proposed in report of Royal Commission, which had cabinet approval.
- July 7, 1937: *Clash between Chinese and Japanese troops* near Peiping inaugurated new Far Eastern crisis.
- July 8, 1937: *Pres. Roosevelt "passed in review"* before 26,000 Boy Scouts from U. S. and 25 foreign countries assembled in Washington for annual jamboree.
- July 9, 1937: *Pres. Roosevelt declared* gov't. employees have no right to strike and only a limited right to bargain collectively.
- July 10, 1937: *Fighting between Japanese and Chinese troops* in North China broke out again despite truce agreement.
- July 11, 1937: *Spanish Loyalists captured Villanueva del Pardillo*, 12 miles west of Madrid, in greatest gov't. offensive of civil war.
- July 13, 1937: *Japanese demanded complete withdrawal* of Chinese troops west of Peiping, suppression of anti-Japanese movements, and Chino-Japanese co-operation against communism; sporadic hostilities continued in North China.
- July 13, 1937: *Provisional Pres. David Toro of Bolivia* was ousted in bloodless coup; replaced by Col. German Busch, chief of General Staff.
- July 14, 1937: *Sudden death of Joseph T. Robinson*, Democratic leader in U. S. Senate, was blow to Roosevelt forces in court reorganization fight.
- July 14, 1937: *Three Soviet fliers* landed plane near San Jacinto, Calif., after record-breaking non-stop 6,262-mile flight from Moscow via North Pole in 62 hours, 2 minutes.
- July 15, 1937: *Pres. Roosevelt, in letter* to Senator Alben W. Barkley, acting majority leader, declared fight for his Court Bill must go on.
- July 16, 1937: *Trans-Atlantic survey flight* planes of Pan American and Imperial Airways completed return trips to Botwood, N. F., and Shannon Airport, Foynes, Irish Free State, respectively.
- July 17, 1937: *Report of Pres. Roosevelt's* National Resources Committee declared inventions made major changes in national economy imminent; urged measures to safeguard labour against adjustments due to technological trends.
- July 18, 1937: *Spanish Rebel counter-attack* upon Brunete checked Loyalist offensive west of Madrid.
- July 19, 1937: *Gov. Herbert Lehman of N. Y.*, close friend of Pres. Roosevelt, in published letter to Senator Robt. F. Wagner, urged him to vote against court reorganization bill as "a greatly dangerous precedent."
- July 19, 1937: *Foreign Sec'y. Eden warned Mussolini* Britain would fight to defend interests in Mediterranean Sea and along route to India.
- July 20, 1937: *Japanese Army issued "last warning"* to Chinese to end hostilities in North China on Japan's terms.
- July 20, 1937: *Shelving of Supreme Court provisions* of Court Bill accepted by Pres. Roosevelt in conference with Vice Pres. Garner and Congressional advisers.
- July 21, 1937: *Senator Alben W. Barkley of Ky.* elected Democratic leader of U. S. Senate over Senator Pat Harrison of Miss. by 38 votes to 37.

# CALENDAR OF EVENTS

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- July 21, 1937: *In fourth rehearing of Scottsboro rape case*, one negro defendant, Andy Wright, was sentenced to 99 years in prison by Morgan Co., Ala., jury; execution of Clarence Norris, previously reconvicted, was set for Sept. 24. On July 24 Charlie Weems was sentenced to prison for 75 years and indictments against five other defendants were nolle prossed.
- July 22, 1937: *British House of Commons* voted to postpone action on partition of Palestine pending discussion before League of Nations.
- July 22, 1937: *Roosevelt Court Bill* was killed, 70 to 20, in U. S. Senate; Judiciary Committee instructed to draft another bill for "procedural reforms in lower courts."
- July 22, 1937: *La Follette subcommittee* of U. S. Senate charged Chicago Police Dep't. with responsibility for fatal Memorial Day clash with strikers at Republic Steel Co. plant.
- July 23, 1937: *Parliament liberalized Britain's archaic divorce laws*; desertion, cruelty and incurable insanity as well as adultery made grounds for action.
- July 25, 1937: *In Spanish civil war*, Rebels recaptured Brunete and drove back Loyalists in counter-offensive west of Madrid; in subsequent fighting Loyalists retained most of their earlier gains.
- July 25, 1937: *Stalin's purge of Russian Communist party* was extended to all newspapers, magazines and publishing houses.
- July 26, 1937: *Japanese detachment entering Peiping* gate was attacked by Chinese, suffering numerous casualties; ultimatum demanding withdrawal from Tientsin-Peiping area presented to Chinese.
- July 26, 1937: *One C. I. O. picket* was killed and 40 strikers and non-strikers injured in riot at Cleveland plant of Republic Steel Corp.
- July 27, 1937: *U. S. Senate Judiciary Committee* reported out new bill for "procedural reforms" in lower Federal courts.
- July 27, 1937: *Reich Gov't. requisitioned* all 1937 wheat and rye crops to safeguard bread supply.
- July 28, 1937: *Japanese troops captured Nanyuan* and opened drive on Peiping, after wiping out Chinese regiment at Tungchow and occupying American missionary school there.
- July 28, 1937: *Bomb explosion and frontier raids* by Irish Nationalists marked post-coronation visit of King George VI and Queen Elizabeth to Belfast, Northern Ireland.
- July 29, 1937: *Chinese made surprise attack* upon Japanese troops in Tientsin; large sections of city devastated by artillery fire and aeroplane bombs before Japanese regained control.
- July 31, 1937: *Japanese cleared Chinese troops* from Tientsin-Peiping area after sharp fighting.
- July 31, 1937: *Mussolini received* "personal letter of friendship" from Prime Minister Chamberlain expressing desire to end Anglo-Italian tension.
- July 31, 1937: *Harold S. Vanderbilt's yacht "Ranger,"* America's Cup defender, defeated British challenger, "Endeavour II" in first race of series off Newport, R. I.
- Aug. 1, 1937: *Granite column in memory of American soldiers* who died in Meuse-Argonne World War offensive unveiled at Montfaucon, France, with speeches by Presidents Lebrun and Roosevelt (the latter broadcast from yacht in Potomac) and Gens. Pershing and Petain.
- Aug. 1, 1937: *French liner "Normandie"* established new westward trans-Atlantic crossing record of 3 days, 23 hours and 2 minutes from Bishop's Rock, England, to Ambrose Light, New York harbour.
- Aug. 2, 1937: *Prime Minister Chamberlain* received friendly reply from Mussolini to his letter seeking Anglo-Italian harmony; Rome announced early termination of journalistic boycott of Britain.
- Aug. 2, 1937: *Pan American-Grace Airways flying boat* plunged into sea off Cristobal, C. Z., with loss of 14 passengers and crew members.
- Aug. 4, 1937: *U. S. House passed*, 205 to 0, Gold Star Mothers' Pension Bill adding \$8,952,000 annually to war pensions cost.
- Aug. 5, 1937: *Harold S. Vanderbilt's yacht "Ranger"* retained the America's Cup for the New York Yacht Club by defeating T. M. Sopwith's "Endeavour II," the British challenger, in fourth successive race of series off Newport, R. I.
- Aug. 6, 1937: *Japanese warned foreign consuls* at Tientsin that they planned to drive out Chinese troops concentrated north of Yellow river.
- Aug. 6, 1937: *U. S. Senate passed* \$700,000 Wagner-Steagall Housing Bill, 64 to 16, with amendment restricting cost of housing to \$1,000 a room.
- Aug. 6, 1937: *Soviet Gov't. agreed to buy* \$40,000,000 worth of goods from U. S. in ensuing year in return for lower tariff on Russian coal and other concessions.
- Aug. 7, 1937: *Expulsion of three German news correspondents* by British Home Office announced. On Aug. 9 Reich ordered expulsion of *London Times* correspondent from Germany.
- Aug. 7, 1937: *U. S. Senate passed compromise bill* for "procedural reforms" in lower Federal courts and approved project for unemployment census.
- Aug. 7, 1937: *U. S. State Dep't. announced* that 37 gov't's. had formally agreed with Sec'y. Hull's statement of July 16 that welfare of all countries demanded observance of international treaties and obligations, lowering of commercial barriers, and reduction of armaments.
- Aug. 8, 1937: *German police arrested 115 supporters* of the Rev. Martin Niemöller, imprisoned anti-Nazi Protestant leader, in first public anti-Nazi demonstration in Berlin.
- Aug. 8, 1937: *French liner "Normandie"* set new west-east trans-Atlantic record of 94hrs. 7min. from Ambrose Light to Bishop's Rock, England; average speed, 31.20 knots per hour.
- Aug. 9, 1937: *Strike of 30,000 silk and rayon textile workers* marked drive of Textile Workers Organizing Committee, C.I.O. agency, to unionize these industries.
- Aug. 9, 1937: *New Sino-Japanese crisis* in Shanghai precipitated by killing of Japanese naval officer and sailor and Chinese soldier in clash near Chinese aerodrome.
- Aug. 11, 1937: *Conservative Democrats* combined with Republicans in U. S. Congress to block Black-Connery wages and hours bill and anti-lynching measure.
- Aug. 11, 1937: *Moscow received news of execution* in Eastern Siberia of 72 more alleged spy-saboteurs in Japanese pay, bringing total executed in that region to 310 in three months.
- Aug. 12, 1937: *Japanese massed 32 warships* at Shanghai over Aug. 9th incident, while systematically crushing Chinese opposition in Peiping.
- Aug. 12, 1937: *Pres. Roosevelt nominated Sen. Hugo L. Black*, of Ala., ardent 51-year-old New Dealer, to succeed Justice Van Devanter on U. S. Supreme Court.
- Aug. 13, 1937: *Shanghai clash between Japanese naval patrol and armed Chinese civilians* gradually spread into large-scale warfare.
- Aug. 13, 1937: *Six Soviet aviators* led by Sigismund Levanevsky, "the Soviet Lindbergh," who took off in one plane from Moscow on trans-polar flight to U. S. Aug. 12, were lost in the Arctic.
- Aug. 15, 1937: *Prov. Pres. Rafael Franco of Paraguay* resigned following army coup d'état. Dr. Felix Paiva, his successor, ended Franco's experiment in state socialism and pledged return to constitutional gov't.
- Aug. 16, 1937: *Japanese launched land, sea and air attack* on Chinese forces at Shanghai; Nanking and other Yangtze valley cities bombed; evacuation of American women and children from Shanghai ordered.
- Aug. 16, 1937: *U. S. House unanimously passed bill* to plug income tax loopholes.
- Aug. 17, 1937: *U. S. Senate confirmed nomination* of Sen. Hugo L. Black of Ala. as associate justice of Supreme Court, 63 to 16.
- Aug. 19, 1937: *Harry L. Hopkins, WPA Administrator*, reported that 1,500,000 workers had left WPA for private employment in 18 months; 1,527,450 were still on rolls.
- Aug. 21, 1937: *U. S. Congress adjourned.*
- Aug. 22, 1937: *Japanese incendiary air bombs* set ablaze one-third of International Settlement and many other districts of Shanghai. First major engagement of war in North China was raging 30 miles southwest of Peiping.



Aug. 22, 1937: *Italy launched 35,000-ton battleship*; sister ship was launched July 25.

Aug. 23, 1937: *Japan tightened hold over private capital* to finance war in China. Sec'y. of State Hull announced middle-of-road policy in Far East based on Washington treaties and peace pacts.

Aug. 24, 1937: *Spanish Insurgents captured Torrelavega*, key to Santander; on following day Santander fell, ending Basque resistance.

Aug. 25, 1937: *Pres. Roosevelt, signing compromise* judiciary reorganization bill, said he would continue fight for thoroughgoing reform of judicial processes.

Aug. 26, 1937: *Japan established blockade of Chinese shipping* along 800-mile stretch of coast. Machine-gun fire from Japanese aeroplane seriously wounded British Ambassador to China, who was motoring from Nanking to Shanghai.

Aug. 28, 1937: *Andrew W. Mellon's entire fortune*, except \$180,000, was left to educational and charitable trust, thus avoiding Federal inheritance tax.

Aug. 28, 1937: *Raids by Japanese bombers on Nantao* section of Shanghai inflicted 600 civilian casualties.

Aug. 29, 1937: *China and Soviet Union* signed non-aggression pact. British gov't. in note to Japan demanded "fullest measure of redress" for shooting of British Ambassador to China. See Aug. 26.

Aug. 30, 1937: *Dollar liner "President Hoover"* was mistaken for Japanese ship and bombed by Chinese airmen while awaiting refugees off mouth of Yangtze; seven members of crew wounded, one mortally. U. S. Gov't. warned American merchant vessels to avoid Shanghai. China offered U. S. formal apology on Aug. 31.

Aug. 30, 1937: *Joe Louis, Detroit negro*, retained world's heavyweight boxing title by defeating Tommy Farr, British Empire titleholder, on points in 15 rounds at New York City.

Aug. 31, 1937: *French Cabinet decreed merging* of six large railway systems in state-controlled National Railway Co.

Aug. 31, 1937: *National Labor Relations Board* defied Federal District Court ruling that A.F. of L. union had valid closed shop contract with Pennsylvania firm and ordered election to determine collective bargaining agent.

Sept. 2, 1937: *Roman Catholic prelates* of Insurgent Spain, with Vatican approval, issued pastoral letter defending Gen. Francisco Franco's military revolt against Spanish Gov't. as legitimate self-defence.

Sept. 2, 1937: *Aroused by submarine attack* on British destroyer, British Gov't. called international conference on "piracy" in Mediterranean.

Sept. 4, 1937: *Chinese counter-offensive in Shanghai* area drove invaders back and forced eight Japanese troop ships to withdraw down Whangpoo river. U. S., British and French Consul Generals unsuccessfully requested Chinese and Japanese to withdraw troops from vicinity of International Settlement.

Sept. 4, 1937: *Extraordinary session of Japanese Parliament* convened to vote funds for Chinese war; Foreign Minister Hirota said Japan must force China to "co-operate" with Japan and Manchoukuo.

Sept. 5, 1937: *Japanese opened offensive* on Shanghai front; extended blockade of Chinese coast. Pres. Roosevelt warned 7,780 Americans in China that they stayed at their own risk.

Sept. 5, 1937: *Dr. Roberto M. Ortiz*, candidate of conservative coalition, won Argentine presidential election.

Sept. 6, 1937: *Soviet Union charged Italy* with torpedoing two Russian freighters in eastern Mediterranean; Rome Gov't. rejected demand for reparation.

Sept. 7, 1937: *Hitler's proclamation to opening session* of annual Nazi party congress at Nürnberg hailed "community of will" between Germany and Italy; pledged support of German-Japanese anti-Communist pact.

Sept. 7, 1937: *Russia accepted invitation* to Mediterranean anti-piracy conference; demanded indictment of Italy for alleged attacks on neutral merchant ships.

Sept. 8, 1937: *Germany and Italy* sent identic notes declining to attend Mediterranean anti-piracy conference; Sec'y. of State Hull indicated U. S. concern over Mediterranean situation while Navy Dep't. warned shipping of dangers there.

Sept. 10, 1937: *Diplomatic corps at Berlin*, with exception of Papal, Russian, Norwegian and Peruvian envoys, attended annual Nazi party congress at Nürnberg for first time.

Sept. 10, 1937: *Plans for crushing "piracy"* in Mediterranean drafted by delegates of Britain, France and seven other powers at Nyon, Switzerland, conference. On Sept. 11 conference instructed French and British navies to counter-attack and destroy any submarine attacking a non-Spanish merchant ship.

Sept. 12, 1937: *Pittsburgh Post-Gazette* published first of series of articles charging that U. S. Supreme Court Justice Hugo L. Black was member of Ku Klux Klan.

Sept. 12, 1937: *U. S. Treasury temporarily abandoned* "sterilizing" of gold to maintain Administration's "easy money" policy. Stock quotations continued to decline on New York market.

Sept. 13, 1937: *China invoked Articles X, XI and XVII* of League Covenant against Japan as League Assembly opened at Geneva; the Aga Khan, India's delegate, was elected president.

Sept. 14, 1937: *Pres. Roosevelt forbade gov't.-owned* merchant ships to transport arms and munitions to China and Japan; said other vessels under American flag would engage in such trade at their own risk.

Sept. 14, 1937: *Nyon anti-piracy agreement* signed by Britain, France, Russia and six Mediterranean powers. Italy demanded parity in patrolling sea as condition of its adherence.

Sept. 15, 1937: *French franc depreciated* to lowest point in 11 years when gov't.

withdrew support of exchange stabilization fund.

Sept. 16, 1937: *U. S. Sen. Royal S. Copeland*, conservative Democrat and candidate for mayor of New York on anti-New Deal platform in both Democratic and Republican primaries, was badly defeated by both his opponents, Jeremiah T. Mahoney, New Deal Democrat, and Mayor Fiorello H. La Guardia, progressive Republican.

Sept. 16, 1937: *League Council decided to refer* China's appeal against Japan to Far Eastern Advisory Committee set up during Manchurian crisis of 1933 with U. S. as non-voting member.

Sept. 17, 1937: *Nanking Gov't. protested U. S. embargo* on munitions and arms shipments as favouring Japan and unfair to China.

Sept. 17, 1937: *Britain and France announced withdrawal* from international naval patrol of Spanish coast established by Non-Intervention Committee.

Sept. 18, 1937: *Sen. Arthur H. Vandenberg of Mich.* urged coalition of anti-New Deal Democrats and Republicans as only effective way to oppose "Roosevelt-Farley-La Follette party."

Sept. 20, 1937: *Sec'y. of State Hull*, speaking at annual American Legion convention in New York City, declared U. S. could stay out of war only by following middle course between isolation and complete entanglement in world affairs.

Sept. 21, 1937: *2,000,000 Czechoslovaks attended funeral* of ex-President Masaryk in Prague.

Sept. 22, 1937: *Ignoring British and American protests*, 50 Japanese planes twice raided Nanking, killing and wounding 200 civilians; air raid on Canton was repulsed. U. S. sent stronger protest note to Tokyo.

Sept. 23, 1937: *British announced that Mussolini* had promised to send no more troops to Spain. Spanish Insurgents began combined land, sea and air attack on Gijon, last Loyalist stronghold on north coast.

Sept. 24, 1937: *Japanese captured Pao-tung*, breaking first Chinese defence line in North China. British Gov't. ordered strong protest against bombing of non-combatants in Chinese cities. Adm. Harry E. Yarnell of U. S. Asiatic Fleet announced his ships would remain in Chinese waters to protect Americans.

Sept. 25, 1937: *Premier Mussolini, arriving in Munich*, began important conferences with Hitler. On Sept. 26 the two dictators reviewed the German army in Mecklenburg. On Sept. 27 they received tumultuous reception in Berlin. On Sept. 28 they spoke to great radio audience, Mussolini predicting a Fascist Europe and Hitler stressing Italo-German "community of views and action."

Sept. 26, 1937: *British district commissioner* of Galilee and body-guard assassinated by Palestine Arabs.

Sept. 27, 1937: *22 gov'ts. represented on League Advisory Committee* on Far East "solemnly condemned" Japanese air raids on open towns in China. Sinking by



Japanese submarine of 12 Chinese fishing junks with loss of 300 men, women and children reported by survivors reaching Hongkong. Anti-Japanese boycott movement gained headway in Britain.

Sept. 28, 1937: *Pres. Roosevelt in speech at Bonneville Dam, Ore.*, promised balanced budget for 1938-39, and defended his program of national planning. He set in motion first generator of \$75,000,000 project.

Sept. 28, 1937: *Sec'y. of State Hull issued statement* endorsing League Advisory Committee's action on Japan.

Sept. 29, 1937: *U. S. Supreme Court Justice Black* arrived at Norfolk, Va., from European vacation. On Oct. 1 he told nation-wide radio audience that he once belonged to Ku Klux Klan but resigned before becoming a Senator and never rejoined.

Sept. 29, 1937: *Pope Pius in encyclical* strongly condemned Communist, neo-pagan and atheist theories.

Sept. 29, 1937: *Washington published note from Tokyo* declaring Japan would continue her course in China despite American protests.

Sept. 30, 1937: *League Political Commission warned Italy* that League members would consider ending non-intervention policy in Spain if immediate and complete withdrawal of non-Spanish combatants could not be obtained.

Oct. 1, 1937: *British authorities in Palestine* deported members of Arab High Committee to check terrorism.

Oct. 2, 1937: *Joint Anglo-French note* demanded withdrawal of Italian troops from Spain; 32 member nations of League Assembly voted to end non-intervention policy in Spain.

Oct. 3, 1937: *Strike of 250,000 U. S. railway workers* averted by agreement increasing pay of all engine, train and yard service employees 44 cents a day.

Oct. 3, 1937: *Fascist parade through Bermondsey section* of London was attacked by anti-Fascists; 30 persons were seriously injured in street fighting.

Oct. 4, 1937: *Hugo L. Black took his seat* as associate justice of the U. S. Supreme Court.

Oct. 4, 1937: *57th annual convention* of American Federation of Labor opened in Denver, Colo.; Pres. William Green called for war on Committee for Industrial Organization.

Oct. 4, 1937: *In speeches at St. Paul, Minn., and Grand Forks, N. D.*, Pres. Roosevelt called for Federal regulation of crops, wages and hours.

Oct. 5, 1937: *Pres. Roosevelt, in Chicago speech*, said civilization was threatened by "reign of terror and international lawlessness"; pledged "concerted effort" with other peace-loving peoples to "quarantine" aggressor nations.

Oct. 5, 1937: *League's Far Eastern Advisory Committee* unanimously condemned Japan as treaty-breaking aggressor and expressed its "moral support" of China.

Oct. 5, 1937: *Italians disclosed that additional troops* had been sent to aid Spanish Insurgents; Premier Mussolini's son Bruno went with crack bombing squadron.

Oct. 6, 1937: *U. S. State Dep't.* formally condemned Japan's actions in China as violations of Nine-Power Treaty and Kellogg-Briand Pact. League of Nations Assembly authorized League members signatory to Nine-Power Treaty to consult with U. S. and other interested powers with view to ending Sino-Japanese conflict.

Oct. 8, 1937: *Prime Minister Chamberlain of Britain*, praising Pres. Roosevelt's Chicago speech, promised whole-hearted cooperation in concerted peace effort; warned Italy that Anglo-Italian friendship depended upon withdrawal of Italian troops from Spain.

Oct. 9, 1937: *Italy rejected Anglo-French* invitation to three-power conference on withdrawal of "volunteers" from Spain; Japan was notified Italy supported her policy in China.

Oct. 10, 1937: *Winning four games out of five* from New York Giants (National League), the New York Yankees (American League) won 1937 world's baseball championship.

Oct. 10, 1937: *Roman Catholic Bishop of Berlin*, in pastoral letter, charged that Reich was being systematically de-Christianized.

Oct. 11, 1937: *Duke and Duchess of Windsor* arrived in Germany to study working and housing conditions.

Oct. 12, 1937: *Pres. Roosevelt called Congress* in special session beginning Nov. 15; in radio "fireside chat" he urged quick passage of legislation for maximum hours and minimum wages, crop control, governmental reorganization, regional planning and a curb on trusts.

Oct. 13, 1937: *A. F. of L. convention* in Denver, Colo., and C.I.O. conference in Atlantic City, N. J., both adopted resolutions condemning National Labor Relations Board for allegedly favouring rival organization.

Oct. 13, 1937: *Germany formally pledged* Belgium to respect its inviolability and territorial integrity unless Belgium joined in military action against Reich.

Oct. 14, 1937: *A. F. of L. convention* approved peace negotiations with C.I.O.; re-elected William Green as president. On Oct. 15, C.I.O. named committee to arrange for peace conference with A. F. of L.

Oct. 15, 1937: *Egyptian ceremony signaled termination* of capitulations in effect since Middle Ages.

Oct. 16, 1937: *U. S. Gov't. formally accepted Belgium's* invitation to Nine-Power Treaty conference at Brussels on Far Eastern situation.

Oct. 16, 1937: *Italy proposed withdrawal* of equal number of foreign "volunteers" from each side in Spanish civil war.

Oct. 17, 1937: *French Cantonal elections* revealed no important shift in public opinion; result strengthened Premier Chautemps.

Oct. 17, 1937: *Airliner crashed into peak* in Uinta Mts. near Utah-Wyoming boundary line, killing 19 occupants.

Oct. 18, 1937: *Chinese air fleet bombed Japanese forces* in Shanghai severely in series of raids; Japanese were reported advancing in Hopeh and Shantung provinces but blocked in Shansi.

Oct. 18, 1937: *Pres. Roosevelt predicted Federal deficit* of \$695,000,000 in 1937-38, or \$732,000,000 more than in his January forecast; deficit attributed to excessive spending by Congress.

Oct. 19, 1937: *Former Gov. Alfred M. Landon of Kansas*, Republican Presidential candidate in 1936, in radio address urged that Pres. Roosevelt be shorn of some of his powers and forced "to take the advice and counsel of other men of both parties."

Oct. 19, 1937: *Italian Cabinet announced* 10 per cent extraordinary capital levy on stock companies and increase in sales tax to 3 per cent in order to continue armament race with other nations.

Oct. 19, 1937: *Stock prices on N. Y. Exchange* rose sharply after largest decline in six years; gains continued in succeeding days.

Oct. 20, 1937: *Dedicating Federal Reserve Board* building in Washington, Pres. Roosevelt said nation's credit machinery must be co-ordinated with other governmental instruments to promote "productive utilization of our human and material resources."

Oct. 20, 1937: *Italy and Germany agreed* in London Non-Intervention Committee to postpone issue of belligerent rights for Spanish Insurgents until after "token withdrawals" of foreign "volunteers" from Spain.

Oct. 21, 1937: *Pres. Roosevelt named his son and secretary*, James Roosevelt, as co-ordinator of executive activities of 18 independent emergency government agencies.

Oct. 21, 1937: *Dissolution of Catholic Centre party* in Free City of Danzig under threat of arrest of leaders left Nazis in absolute control and Danzig united with Reich in everything but name.

Oct. 22, 1937: *Interstate Commerce Commission* authorized U. S. railways to increase freight rates on a limited list of basic commodities.

Oct. 22, 1937: *Sec'y. of State Hull* and Prime Minister Mackenzie King of Canada, speaking from Toronto, urged nations of world to co-operate in preserving peace by peaceable means.

Oct. 23, 1937: *Prov. Pres. Federico Paez of Ecuador* resigned; succeeded by Gen. Alberto Enriquez, former War Minister.

Oct. 23, 1937: *Australian general election* retained Prime Minister Joseph A. Lyons' coalition government in power.

Oct. 24, 1937: *Miss Jean Batten of New Zealand* established new solo air record of 5 days, 18hrs. and 15min. from Darwin, Australia, to Lympne, Kent, England.



Oct. 25, 1937: *Peace parleys between A.F. of L. and C.I.O.*, began in Washington.

Oct. 25, 1937: *Premier Paul Van Zeeland of Belgium* and his cabinet resigned to answer charges of irregularities in administration of National Bank.

Oct. 25, 1937: *Japanese rushed large contingents of troops* from North China to Manchoukuo, where serious risings and troop mutinies were reported.

Oct. 26, 1937: *Former Pres. Hoover, in radio address* before Republican Club of Mass. at Boston, urged Republican party to defend interests of "forgotten" middle class; denounced New Deal as collectivistic and immoral.

Oct. 26, 1937: *U. S. Steel Corp. declared common stock* dividend of \$1 a share, the first in five years; Edward R. Stettinius, Jr., elected to succeed Myron C. Taylor as chairman of board.

Oct. 27, 1937: *Japanese cracked Chinese defence line* at Shanghai after two months of hard fighting and captured Kiangwan, Chapei and other areas of city; Chinese retreated in order to new line. Japan rejected invitation to Nine-Power Conference at Brussels.

Oct. 27, 1937: *Federal Reserve Board* announced modifications effective Nov. 1 in margin requirements for purchasing or carrying securities.

Oct. 28, 1937: *Mussolini pledged support* of Germany's colonial claims and of campaign to drive communism from Spain and Europe in speech celebrating 15th anniversary of Fascist march on Rome.

Oct. 28, 1937: *Prof. Albert von Szent-Gyorgyi*, medical research worker of Szeged Univ., Hungary, awarded 1937 Nobel Prize for Physiology and Medicine for discoveries on "biological process of combustion, especially in relations to vitamins A and C."

Oct. 29, 1937: *Fifteen Japanese shells* crashed into International Settlement at Shanghai, killing three British soldiers and wounding four others. Germany declined invitation to Nine-Power Treaty parley at Brussels.

Oct. 30, 1937: *Mussolini withdrew Italian Ambassador* to Paris due to France's continued refusal to recognize Italian sovereignty in Ethiopia.

Oct. 30, 1937: *Floods inundated 100 villages* and drowned more than 1,000 persons near Damascus, Syria.

Oct. 31, 1937: *377 survivors of Chinese "lost battalion"* escaped to Shanghai's International Settlement on orders of Gen. Chiang Kai-shek and were interned; they withstood Japanese attacks for four days after refusing to join general Chinese withdrawal from Chapei.

Oct. 31, 1937: *New York Times correspondent* reported 500 Italian and German aviators, 100 planes and six submarines at Majorca, Balearic Islands.

Nov. 1, 1937: *Foreign Sec'y. Eden* told British House of Commons that any action by Brussels Conference on Sino-Japanese war "depends essentially" upon U. S. co-operation.

Nov. 1, 1937: *Labour Party strengthened its control* over London and held its own throughout England and Wales in municipal elections.

Nov. 1, 1937: *2,000 reported drowned* and 60,000 made homeless in unprecedented floods in Syria.

Nov. 2, 1937: *New York city voters* re-elected Mayor Fiorello H. La Guardia by 453,000 plurality; Special Rackets Prosecutor Thomas E. Dewey, Republican candidate for district attorney of Manhattan, and La Guardia's other running mates were swept into office in greatest Tammany defeat on record. U. S. Senator A. Harry Moore (Dem.) was elected governor of New Jersey for third time; C.I.O. candidate for mayor of Detroit was defeated 2 to 1.

Nov. 3, 1937: *Representatives of 14 nations* including U. S. convened at Brussels under Nine-Power Treaty to discuss means of ending Sino-Japanese conflict.

Nov. 3, 1937: *Baltimore Federation of Labor* passed resolution protesting projected visit of Duke and Duchess of Windsor to U. S. to study labour conditions. After similar protests from other labour groups, the Duke and Duchess on Nov. 5 cancelled arrangements for trip.

Nov. 4, 1937: *Pres. Cardenas nationalized* 2,000,000 acres of oil lands in southern Mexico, including 350,000 acres under lease to Standard Oil Co. subsidiary.

Nov. 5, 1937: *Republican National Committee at Chicago meeting* voted to establish committee to draft party program.

Nov. 5, 1937: *Japanese menaced Chinese defenders* of Shanghai from rear by landing troops at Hangchow Bay.

Nov. 6, 1937: *Italy signed German-Japanese anti-Communist pact* of Nov. 25, 1936. Closer co-operation of three powers in other fields anticipated.

Nov. 6, 1937: *Repudiating stand of American Medical Ass'n.*, 430 outstanding U. S. doctors declared health direct concern of gov't.; urged medical profession to formulate national health policy "directed toward all groups of the population."

Nov. 6, 1937: *Brussels Conference asked Japan* to exchange views on Far Eastern conflict.

Nov. 7, 1937: *Soviet Union celebrated 20th anniversary* of Bolshevik Revolution.

Nov. 8, 1937: *Russia warned Italy* that she considered latter's adherence to anti-Communist pact an unfriendly act.

Nov. 9, 1937: *Main body of Chinese retreated from Shanghai* before Japanese pincer movement, ending struggle for city begun Aug. 13; in North China Japanese captured Tai-yuan, capital of Shansi.

Nov. 9, 1937: *Pres. Roosevelt said Administration* would co-operate with utilities if they abandoned practice of basing rates on reproduction cost of properties.

Nov. 10, 1937: *Pres. Getulio Vargas dissolved Federal Congress* and State Assemblies of Brazil; issued new constitution establishing corporative State.

Nov. 10, 1937: *Sec'y. of Treasury Morgenthau* asked business world's support in

overcoming recession; declared Administration would balance budget and revise inequitable taxes.

Nov. 11, 1937: *State ownership of all British coal deposits* on July 1, 1942, provided for in Conservative Gov't.'s Coal Bill.

Nov. 11, 1937: *Nobel Prize for physics* awarded jointly to Dr. Clinton Joseph Davisson of New York and Prof. George Paget Thomson of London; for chemistry, jointly to Prof. Walter Norman Haworth of Birmingham, England, and Prof. Paul Karrer of Zurich, Switzerland; for literature, to Roger Martin du Gard of France.

Nov. 12, 1937: *Japan declined second bid* to discuss Far Eastern peace with Brussels Conference powers.

Nov. 12, 1937: *Second purge in five months* of anti-Stalin officials of White Russia reported; Soviet ambassadors recalled from Germany, Turkey and Poland.

Nov. 13, 1937: *Chinese forces retreating from Shanghai* began to crumble under Japanese blows.

Nov. 13, 1937: *Motorized U. S. Army division* of 9,200 men and 1,108 vehicles covered 326 miles in one day in Texas manoeuvres.

Nov. 14, 1937: *Pres. Roosevelt in radio address* asked "national teamwork" in carrying out unemployment census by mail.

Nov. 15, 1937: *Special session of Congress* convened at Pres. Roosevelt's call to legislate on agriculture, wages and hours, governmental reorganization, and regional planning. President's message suggested limited revision of tax laws to aid business.

Nov. 15, 1937: *Brussels Conference on Sino-Japanese conflict* adopted resolution declaring Japan "out of step with the world" and urging her to discuss situation with other signatories of Nine-Power Pact.

Nov. 16, 1937: *Distribution of 85,000,000 unemployment census blanks* started by U. S. Post Office.

Nov. 17, 1937: *Viscount Halifax, British Cabinet officer*, arrived in Berlin on mission to sound out German leaders on prospects for peaceful European settlement.

Nov. 18, 1937: *Anglo-American agreement* to negotiate reciprocal trade pact announced after year of preliminary negotiation.

Nov. 18, 1937: *1937 Nobel Peace Prize awarded* to Viscount Cecil of Chelwood, a founder of League of Nations and disarmament advocate.

Nov. 18, 1937: *Unauthorized sit-down strike* of several hundred men in Fisher Body plant at Pontiac, Mich., closed two General Motors factories employing 14,721 workers; strike ended Nov. 22.

Nov. 19, 1937: *French Chamber of Deputies* voted confidence in Chautemps Ministry, 399 to 160, after revelation of revolutionary plot by Les Cagoulards, anti-Popular Front hooded secret society.

Nov. 19, 1937: *Capt. George E. T. Eyston of England* set new world land speed record of 311.42 miles per hour in auto racer on Bonneville Salt Flats, Utah.



Nov. 20, 1937: *Amadeo, Duke of Aosta* and cousin of King Victor Emmanuel, appointed Viceroy of Ethiopia succeeding Marshal Rodolfo Graziani; Mussolini added Ministry for Italian Africa to his four other cabinet portfolios.

Nov. 21, 1937: *Chancellor Hitler, in speech at Augsburg*, declared Germany must become "a great empire"; said he did not expect settlement of Reich's colonial claims for five to six years.

Nov. 22, 1937: *Japanese claimed all sovereign rights* that China had exercised in Shanghai International Settlement and French Concession.

Nov. 23, 1937: *Securities and Exchange Commission* warned U. S. stock exchanges to initiate more thorough-going reforms or face sharper gov't. regulation.

Nov. 24, 1937: *Brussels Conference "recessed"* indefinitely after ignoring Chinese pleas for "positive and concrete measures" against Japan; adopted declaration of principles condemning Japanese effort to settle dispute by armed force.

Nov. 24, 1937: *U. S. public relief bill* was \$1,685,491,000 for first nine months of 1937, \$152,416,000 less than for same period of 1936.

Nov. 25, 1937: *U. S. celebrated its 317th Thanksgiving* with eulogies of democracy; Germany and Japan marked first anniversary of anti-Communist pact.

Nov. 26, 1937: *Walther Funk, Reich press chief*, succeeded Dr. Hjalmar Schacht as German Minister of Economics; appointment considered victory for Col. Gen. Hermann Göring's self-sufficiency policy.

Nov. 27, 1937: *Japanese in Shanghai* took over Chinese postal, customs and communications agencies. U. S., Britain and France immediately protested against Japanese customs control.

Nov. 27, 1937: *Chancellor Hitler announced plans* to rebuild Berlin on grandiose scale as "eternal capital" of Reich.

Nov. 27, 1937: *Chemical creation of life* from sexless egg fragments described before American Philosophical Society at Philadelphia by Dr. Ethel Browne Harvey of Princeton.

Nov. 28, 1937: *Spanish Insurgents proclaimed blockade* of all Loyalist ports in defiance of London Non-Intervention Committee.

Nov. 29, 1937: *Pres. Roosevelt urged Congress* to reduce financing costs and spread benefits of National Housing Act to stimulate private construction.

Nov. 30, 1937: *French Premier and Foreign Minister* ended three-day conference with British officials in London on world situation; final communiqué reaffirmed Anglo-French unity and declared other powers must join in solving colonial problem.

Dec. 1, 1937: *U. S. Gov't. filed anti-trust suits* in New York against Western Union Telegraph Co., Postal Telegraph and Cable Corp., and 36 subsidiaries of latter concern.

Dec. 2, 1937: *Wages and Hours Bill* forced out of hostile Rules Committee for consideration by U. S. House of Representatives on petition of 218 members.

Dec. 2, 1937: *Maj.-Gen. Viscount Gort* appointed Chief of Imperial General Staff in drastic reorganization of British Army Council by War Minister Leslie Hore-Belisha; all elderly members eliminated.

Dec. 2, 1937: *William Green, pres. of A.F. of L., and John L. Lewis, C.I.O. chief*, met in Washington in effort to settle labour's two-year internal conflict.

Dec. 2, 1937: *Foreign Minister Yvon Delbos* left Paris for tour of Warsaw, Bucharest, Belgrade, and Prague to strengthen ties with France's allies; returned to Paris Dec. 19 with assurances of their support.

Dec. 3, 1937: *Japanese occupied 30 square blocks* of International Settlement after Chinese threw bomb into "victory parade" of 5,000 Japanese troops through Shanghai; they withdrew from American defence sector under threat of forceful action by U. S. Marines.

Dec. 3, 1937: *Sir Harold MacMichael* appointed British High Commissioner to Palestine, effective Feb. 1, 1938.

Dec. 3, 1937: *Pres. Vargas decreed dissolution* of all Brazilian political parties, including Fascist Integralistas.

Dec. 4, 1937: *U. S. Federal Reserve Board* liberalized and simplified margin requirements for purchase and carrying of securities.

Dec. 5, 1937: *Gov. George D. Aiken of Vt.* in open letter to Republican National Committee called upon it to purge itself of reactionary elements, to accord greater recognition to younger Republicans, and to prepare constructive party program immediately.

Dec. 5, 1937: *Japanese captured Kuyung*, key defence position 25 miles from Nanking; they broke through 300,000 Chinese troops defending capital and reached outskirts of city Dec. 6.

Dec. 6, 1937: *U. S. Supreme Court ruled, 5 to 4*, that West Virginia and Washington could legally tax gross incomes of contractors on Federal projects; decision considered blow at long-standing immunity of Federal agencies from State taxation and vice versa.

Dec. 7, 1937: *Resignation of William E. Dodd* as U. S. Ambassador to Germany revealed at Washington.

Dec. 8, 1937: *National Ass'n. of Manufacturers'* New York convention called on gov't. and labour to "unshackle" industry; declared unlimited economic progress was in prospect "if only a reasonable profit can be anticipated."

Dec. 8, 1937: *Joseph P. Kennedy*, chairman of U. S. Maritime Commission, selected as Ambassador to Great Britain, succeeding Robert W. Bingham, who resigned because of ill health.

Dec. 9, 1937: *WPA employment for 350,000 additional workers* announced by Administrator Harry L. Hopkins to offset

increasing unemployment in private industry.

Dec. 9, 1937: *Japanese announced capture of Wuhu*; on Dec. 10 they gained foothold within Nanking's walls but Chinese continued desperate resistance.

Dec. 10, 1937: *U. S. House passed Farm Bill* for compulsory control of crop surpluses, 267 to 130.

Dec. 11, 1937: *Mussolini announced Italy's withdrawal* from League of Nations.

Dec. 12, 1937: *Supreme Soviet of U.S.S.R.* was elected in first vote under new "democratic" constitution; ticket headed by Joseph Stalin was unopposed.

Dec. 12, 1937: *Japanese naval aviators* bombed and machine-gunned U. S. gunboat "Panay," which was sunk, and three Standard Oil vessels on Yangtze River 25 miles above Nanking. Of 76 persons on "Panay," 1 Chinese was killed, two American sailors and Italian news correspondent were mortally wounded, and 17 others injured. Capt. C. H. Carlson, American skipper of Standard Oil steamer "Meian," was killed. Pres. Roosevelt on Dec. 13 demanded full expressions of regret, full compensation, and guarantees against repetition of such attacks. London Gov't. likewise protested Japanese shelling of British gunboats and merchant ships on Yangtze.

Dec. 13, 1937: *U. S. Supreme Court, 6 to 3*, upheld Treasury's right to call gold-clause Liberty Bond loans for redemption in currency without paying interest to original date of maturity.

Dec. 13, 1937: *League of Nations Armaments Yearbook* placed 1937 world armament costs at \$7,100,000,000 gold against \$2,500,000,000 gold in 1913.

Dec. 14, 1937: *Pro-Japanese provisional gov't.* to rule conquered Chinese provinces established at Peiping, which was renamed Peking.

Dec. 14, 1937: *218 Representatives signed petition* to bring before U. S. House on Jan. 10, 1938, Ludlow constitutional amendment barring Congress from declaring overseas war except after national referendum.

Dec. 14, 1937: *U. S. Senate rejected* Administration-supported measure to restrict Farm Bill expenditures to \$500,000,000 annually.

Dec. 15, 1937: *Ten-point recovery program* calling for repudiation of most of New Deal drafted by group of conservative Democratic and Republican Senators for Congressional action.

Dec. 16, 1937: *Official reports reaching Washington* indicated Japanese attack on "Panay" was deliberate; Japanese authorities in Shanghai announced dismissal and recall of Rear Admiral Mitsuzawa, commander of Japanese naval air forces in China, in punishment for bombing.

Dec. 16, 1937: *Republican National Committee* named Glenn Frank, former pres. of Wisconsin Univ., as chairman of committee to draft party program.

Dec. 17, 1937: *U. S. House shelved Wages and Hours Bill*, 216 to 198, after days of bitter debate. Senate passed Farm Bill, 59 to 29.



Dec. 18, 1937: *Spanish Loyalist troops encircled Teruel*, key Insurgent position in north-eastern Spain, in three-day offensive declared greatest Loyalist victory of civil war. Teruel was occupied Dec. 21 after six-day struggle in streets but several thousand Insurgents continued to hold out in seminary and Bank of Spain building.

Dec. 18, 1937: *Emperor Hirohito received detailed information* on "Panay" bombing from Premier Konoye.

Dec. 18, 1937: *U. S. House voted 324 to 24* to liberalize National Housing Act in line with Pres. Roosevelt's recommendations.

Dec. 18, 1937: *36 defendants found guilty* in Springfield, Ill., Federal district court of bombing conspiracy during mine union warfare of 1932-35.

Dec. 19, 1937: *Soviet Gov't. announced execution* for high treason of Leo. M. Karakhan, former Vice-Commissar of Foreign Affairs, and seven other important Soviet officials.

Dec. 19, 1937: *Completion of 1,800-mile* Soviet military railway paralleling Trans-Siberian Ry. from Lake Baikal to Khabarovsk near Pacific reported.

Dec. 20, 1937: *Sec'y. of State Hull announced* U. S. would keep its existing military and naval forces in China.

Dec. 20, 1937: *U. S. Supreme Court ruled*, 7 to 2, that information obtained by tapping telephone wires could not be used as evidence in criminal trials.

Dec. 21, 1937: *Unqualified support of Pres. Roosevelt* in diplomatic crisis with Japan over "Panay" bombing announced by Alfred M. Landon, Republican presidential candidate in 1936; Pres. Roosevelt

declared his opposition to policy of "peace at any price."

Dec. 21, 1937: *U. S. Senate passed Housing Bill*, 60 to 4. Special session of Congress adjourned without final action on any one of four major measures requested by Pres. Roosevelt.

Dec. 21, 1937: *A. F. of L.-C. I. O. peace negotiations* ended in failure.

Dec. 22, 1937: *Pres. Roosevelt warned Congress* that he would hold it responsible for appropriations in excess of budget estimates.

Dec. 23, 1937: *National Labor Relations Board* declared Ford Motor Co. guilty of violating National Labor Relations Act.

Dec. 24, 1937: *Japanese laid siege to Tsinan*, capital of Shantung Province; it capitulated Dec. 27, leaving Japan in control of seven provincial capitals in addition to Nanking. Chinese razed Japanese cotton mills and other valuable properties in Tsingtao in advance of Japanese occupation.

Dec. 24, 1937: *Pope Pius told Sacred College of Cardinals* Catholic Church in Germany was victim of "terrible persecution."

Dec. 24, 1937: *Japan in formal reply to U. S.* protest on "Panay" bombing declared the attack unintentional, but apologized and promised compensation and guarantees against repetition. On Dec. 25 Sec'y. of State Hull accepted Japanese note as satisfactory, conditional upon future observance of U. S. treaty rights.

Dec. 26, 1937: *Ass't. Attorney-General Robert H. Jackson* fired opening gun of Administration campaign against business monopolies in Washington radio address;

attributed business recession to high monopoly prices.

Dec. 26, 1937: *British completed plans* for broadcasts in Arabic, Spanish and Portuguese to counteract anti-British radio propaganda from Italian stations.

Dec. 28, 1937: *Expressing "growing concern"* at world events, Pres. Roosevelt indicated prospect of enlarged naval building program in letter to House Appropriations Committee chairman.

Dec. 28, 1937: *William S. Knudsen*, pres. of General Motors, announced lay-off of 30,000 workers and placing of 205,000 remaining workers on three-day 24-hour week due to business slump.

Dec. 28, 1937: *Octavian Goga, anti-Semitic*, pro-German Fascist leader, named Premier of Rumania by King Carol after defeat of Tatarescu Gov't. in elections of Dec. 20.

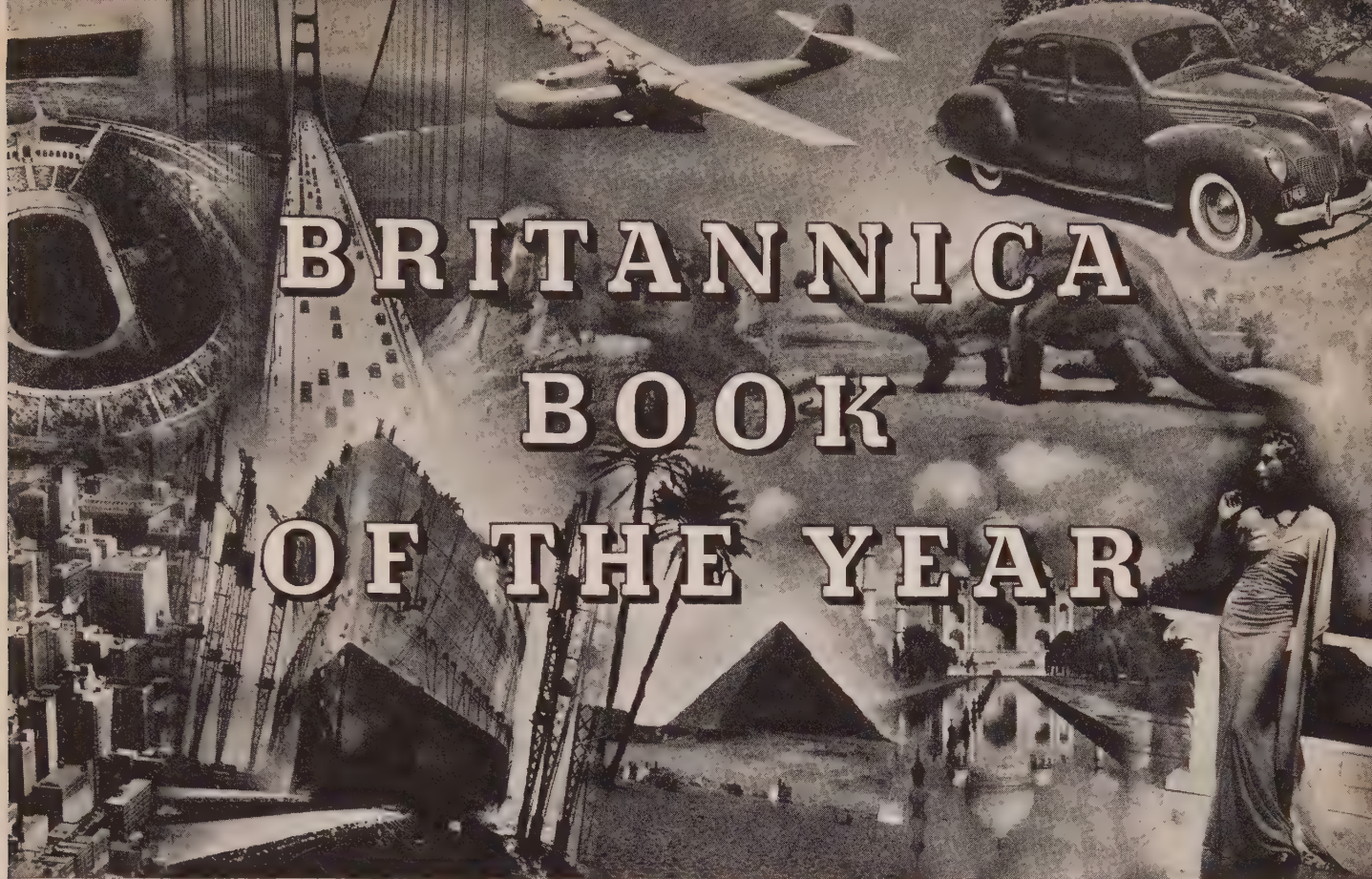
Dec. 30, 1937: *One-day strike of Paris utility workers* ended with compromise agreement for wage increases designed to offset rising living costs.

Dec. 30, 1937: *Pres. Roosevelt reported* directing Administration drive against monopolies in effort to reduce building costs and promote gov't.-assisted private housing boom; Sec'y. of Interior Ickes in radio speech declared anti-trust campaign was death-struggle with plutocracy.

Dec. 30, 1937: *Spanish Insurgents reported gains* in strong counter-offensive against Loyalists at Teruel.

Dec. 31, 1937: *200,000 retreating Chinese troops* in Shantung Province were in danger of being trapped by Japanese.





**Abdulhalik Hamid** (1852-1937), Turkish poet, died at Istanbul on April 13, 1937. He was one of the pioneers in the movement for purging Turkish literature of all foreign influences. Among his best known works are *Tarik Ibn Zeyad* and *Makber*. Hamid was also a distinguished member of the Turkish consular and diplomatic services.

**Aberhart, William** (1878- ), Premier of the Province of Alberta, was born near Seaforth, Ontario, Dec. 30, 1878, the son of William Aberhart, German, and Louisa Pepper, English. He was educated at Seaforth, the Hamilton Normal college, and Queen's university, taught school and was principal of Crescent Heights high school, Calgary, 1915-1935. After the Alberta general election of Aug. 22, 1935, Mr. Aberhart found himself head of the largest group returned, the Social Credit Party and on September 3 was sworn in as Premier.

Up to the present time Mr. Aberhart has not succeeded in putting his social credit plan into operation. The main idea of this plan is to set up a new monetary system and to give a dividend of \$25 a year to each citizen in the Province. Towards this end, on Aug. 4, 1937, a bill was introduced in the Alberta Legislature to licence and regulate chartered banks. This bill was passed by the Provincial house on August 6, but was disallowed by the Dominion Government on August 17. A new and similar bill was then introduced together with a bill "to ensure publication of accurate news and information." Both of these bills were reserved for assent by J. C. Bowen, lieutenant-governor of the Province. Arising out of this and at Mr. Aberhart's request the Federal Government announced on October 28 that the whole question of the right of Federal disallowance of provincial legislation would be placed before the Canadian supreme court. No decision was handed down by the supreme court in the year 1937.

(See also ALBERTA; SOCIAL CREDIT.)

(J. T. C.)

**Abyssinia:** see ETHIOPIA.

**Academic Freedom** is the right of a person connected with an educational institution freely to express the conclusions resulting from his study, either orally or through publications, without interference or restraint from administrative, political, or religious authority. It is subject to limitations imposed by scholarly bodies who may insist that academic freedom shall neither cloak techniques found clearly imperfect nor violate canons of professional ethics.

The demand for academic freedom arises from the belief that the advancement of knowledge is best fostered by allowing the scholar a wide latitude in the expression of his opinions. New truths frequently conflict with accepted beliefs or social institutions.

The struggle for academic freedom which at an earlier date centred in the field of ecclesiastical doctrines and the relationship of the church to the newly emerging physical sciences, is now focused in the social sciences although conflicts in other areas are by no means uncommon.

The major scholarly associations in the United States of a general character have established committees to uphold academic freedom and tenure. This list, in 1937, included the American Association of University Professors, the National Education Association, the Progressive Education Association, and the American Federation of Teachers. Cases reported to these associations suggest that the limitations on academic freedom are most often of an indirect character. They are apt to assume such forms as holding a scholar under a year-to-year tenure, making known to him the fact that unconventional ideas will not lead to advancement, and urging withdrawal from expression or participation in controverted issues. The pressure toward conformity has been assisted by Government action. Such action has resulted in compulsory teachers' oaths of loyalty to constitutional authority and to prohibitions of radical utterances. Seventy-five such laws



limiting freedom of expression were on the books of forty-four States in 1935. In two States the mere expression of radical opinion was made a criminal offence. Legal limitations of this character have met with stout resistance in academic circles, though they have undoubtedly hampered free expression by timid or economically insecure teachers.

In 1937, fifty-eight cases of alleged violations of academic freedom were handled by the American Association of University Professors, a slight decrease from the average of the preceding four years. In the most important case, that of Jerome Davis, associate professor of practical philanthropy at the Yale divinity school, the association found Yale university guilty of "a violation of the principles of academic tenure which must be maintained if freedom of teaching or research, and of expression of opinion off the campus is to be a reality for members of the faculties of our institutions of higher learning." The other three associations were even more emphatic in their censure. They declared that in terminating Professor Davis' contract in June 1937, after thirteen years of service, the governing authorities of Yale had been swayed by opposition to Davis' writings, public utterances, and invitations to liberals to speak from a Yale platform.

(C. E. WA.)

**Academy of Arts and Letters, American:** see AMERICAN ACADEMY OF ARTS AND LETTERS.

**Academy of Political and Social Science, American:** see AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE.

**Accidents:** see DISASTERS; MARINE INSURANCE.

**Actors and Acting:** see THEATRE.

**Addis Ababa:** see ETHIOPIA.

**Aden.** On April 1, 1937, the administrative control of the Aden Settlement was transferred, in virtue of the Government of India Act, 1935, from the Government of India to that of the Colonial Office. From that date Aden assumed the status of a Crown colony, and the Government of India ceased to pay the fixed contribution on account of the military and political charges which it had done in the past. The transfer of control does not mean any breach in continuity in machinery and methods of government. The spirit, and in many cases the letter, of existing laws and regulations will be retained. The right of appeal in judicial cases to the High Court of Bombay, the use of Indian currency, and the maintenance of the port as a free port will continue.

The population of Aden was: Aden proper, 34,471, and Little Aden, 12,167, or a total of 46,638. The population of the Protectorate, about 42,000 sq.mi. of territories of Arab chiefs in treaty relations with Great Britain, lying E., N., and W. of the settlement is estimated at about 600,000. The number of vessels, exclusive of country crafts, which entered the port of Aden during 1936-37 was 2,088, and the number of sailing vessels and dhows, 1,145. The total value of imports was Rs. 7,08,86,985, of which Rs. 21,69,085 was land-borne.

Total exports were Rs. 4,30,70,424, of which Rs. 16,13,066 were land-borne.

Perim continues to be administered by the commissioner of police at Aden. The harbour and post office have been closed since Nov. 1936. Socotra, also under the Government of Aden, has continued the even tenor of its life.

**Adjusted Compensation.** On May 19, 1924, the World War Adjusted Compensation Act was passed by the Congress of the United States providing for the adjustment of the pay of veterans of the World War. In substance it bestowed basic service credit of \$1.00 for each day's

service in the United States and \$1.25 for each day's service overseas, with deduction on account of the \$60 bonus previously authorized and limited to a maximum of \$500 for home service and \$625 for overseas service. If service credits amounted to no more than \$50, veterans were paid in cash, payments numbering 175,186 and aggregating \$5,501,880.35 having been paid under this provision of the statute.

In the case of deceased veterans, service credits were payable to their dependents and such payments amounting to \$46,309,-681.17 have been made on 144,871 veterans' cases. To living veterans whose service credits exceeded \$50 there have been issued 3,786,556 adjusted service certificates, the face values of which total \$3,706,752,878.00.

These certificates having loan privileges are, in essence, paid-up 20-year endowment insurance policies, the maturity values thereof approximating two and one-half times the service credit. A sum of \$235,646,752.00 has been paid on 238,407 certificates because of maturity having been occasioned by the deaths of veterans.

Legislation enacted January 27, 1936 made the face values of adjusted service certificates, less any outstanding loans and interest accrued prior to October 1, 1931, payable as of June 15, 1936, upon application.

The face values of the 3,468,967 adjusted service certificates upon which certifications have been made totalled \$3,403,408,-881.00, and the amount certified as payable after deducting outstanding liens was \$1,895,902,731.46.

Payment was prescribed by the law to be made by the issuance of bonds of the United States in denominations of \$50, odd amounts in excess of any multiples of \$50 to be paid by checks. These bonds are dated June 15, 1936 and mature on June 15, 1945, but are redeemable at the option of the veteran at any time, interest accruing at the rate of 3 per centum per annum except no interest accrues on bonds redeemed prior to June 15, 1937. In settlement the Treasury Department has issued to veterans bonds totalling \$1,813,452,600.00 and has redeemed \$1,450,228,650.00 of these bonds. All data herein cited are as of September 30, 1937.

(F. T. HL.)

**Adjusted Service Bonds:** see ADJUSTED COMPENSATION; POST OFFICE.

**Adler, Alfred** (1870-1937), Austrian psychologist, who studied psychoanalysis with Sigmund Freud and then broke away in 1911 to found his own school of Individual Psychology. He considered that Freud overemphasized the influence of sex and underestimated the inferiority complex and drive for power in the individual. His theories led to new methods of psychotherapy and education. Born in Vienna in 1870, he studied medicine—first practising as an eye specialist and later as a psychiatrist. His theories gained international attention and he taught at the Long Island University College of Medicine, the Vanderbilt Clinic, the Columbia-Presbyterian Medical Center, and the New School for Social Research in New York city as well as in the schools of Vienna. It was while on a lecture tour of British medical centres that he died in Aberdeen on May 28, 1937. Among his published works were *The Practice of Individual Psychology*, *The Science of Living*, and *Pattern of Life*.

**Adult Education.** The most striking fact in the field of adult education, in the year 1937, was the steady growth of the idea that governments have a responsibility for the intellectual growth of their mature citizens.

In the totalitarian nations of Europe, this responsibility had already been accepted. If carefully controlled indoctrination is not "adult education" as it is understood in democratic countries,



it is at least the present substitute for what was adult education in those countries before their revolutionary reorganization.

The trend toward the assumption of greater governmental responsibility was indicated in most of the important meetings of the year. The Congrès International de l'Enseignement primaire et de l'Éducation populaire, convened in Paris in a favourable political atmosphere, heard reports on national programs. The annual conference of the British Institute of Adult Education, at Cambridge in September, was concerned largely with questions of citizenship. In Australia and New Zealand, a series of meetings were held at which British, European and American scholars spoke of adult education possibilities. The meeting of the World Federation of Education Associations, in Tokyo, considered similar problems.

The American Association for Adult Education gave over its annual meeting in May to discussion of the "social significance" of the movement and has begun publication of a series of books which will attempt to estimate the "social" significance of various current activities.

Important national programs developed toward stability. In the United States, the Works Progress Administration emergency classes were largely attended. To some extent their work, under public school management, has replaced much of what was formerly carried on by private and semi-public agencies. The number of teachers paid from Federal relief funds has been reduced to about 25,000, but they have consolidated their position in many local school systems. The Adult Department of the National Education Association, a professional body, passed a resolution at its June meeting advocating the use of public funds "proportionate to the demonstrated needs." Civilian Conservation Corps camps were reduced in number but enlarged in their educational programs. Federal grants as set up in agricultural and vocational extension are now being studied for reform by a presidential committee.

Tutorial classes in Great Britain, the solid core of British adult education, seem to have reached a limit of numbers. But newer and more general kinds of work are claiming a larger place in the national program. The Woman's Institutes, for example, in their twenty-first year, had a membership of 350,000. Rural music schools, a newer enterprise, showed a healthy growth. The British Institute undertook programs for the patients in several London hospitals. At Newbattle Abbey, the first Scottish residential Adult Education college, was opened in January.

Political events disrupted the illiteracy program in China. In India, however, where the educational problem is similar, a successful congress on illiteracy problems was held in Nagpur under the auspices of the National Christian Council. Swedish educational and reform societies held a first annual national conference for collaboration.

Despite setbacks in some countries, those in which democracy is still at work made evident progress in adult education during 1937 and strengthened themselves for the future by arousing greater public and governmental interest. (L. BN.)

**Advertising.** The principal developments during 1937 were increased advertising volume, changing trends in copy and layout, rapid gains in the circulation of new magazines, closer control of advertising practices through legislation and voluntary regulation, and keener appreciation of the consumer point of view.

During the year, advertising volume in the United States increased 5.7% over 1936. Radio gained 18%, outdoor advertising 15%, magazine advertising 12%, farm paper advertising 5.6%, and advertising in newspapers 2.8%. In the United Kingdom, advertising volume in national daily newspapers increased about 1%, and in provincial daily newspapers decreased less than 1%, com-



HUMOUR gives instant reader interest to this advertisement of the Philco Radio & Television Corporation, prepared by the Hutchins Advertising Company, Inc.

pared with an increase of about 10% for magazines.

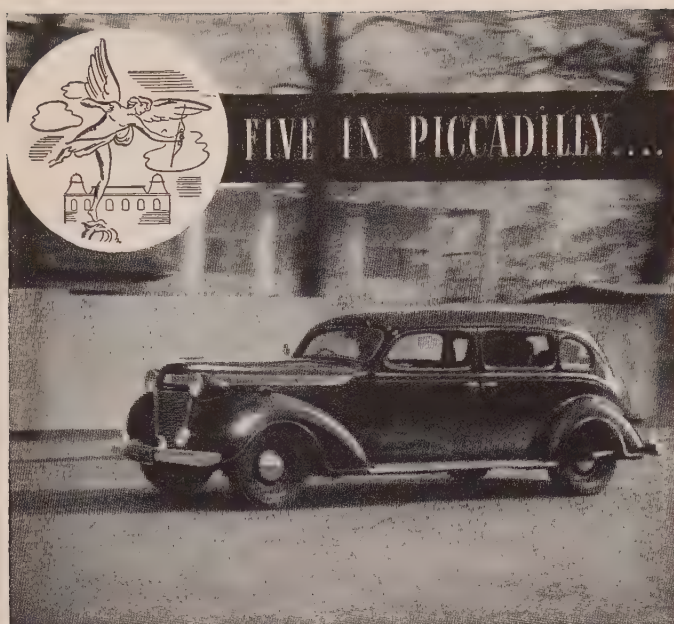
**Copy and Layout.**—Advertising writing, in 1937, became more frank, terse and dramatic. Directness of expression, introduced for radio broadcasting, was transferred to the printed page. Humour became more prevalent, and advertisements resembling newspaper comic strips were used more extensively. About 300 newspapers in the United States arranged to publish such advertisements on their comic pages. Although generally humorous, this type of advertising may be serious in tone.

Institutional advertising, designed to develop goodwill toward the advertiser's business, increased during 1937. In the United States, large manufacturers, banks, insurance companies, and public utilities emphasized this type of appeal. It is estimated that 35 States appropriated a total of \$5,500,000 to advertise facilities for tourists and industries during 1937, twelve for the first time. In the United Kingdom, the Post Office and other Government agencies used institutional advertising.

Advertising headlines became shorter and more rhythmic. There was a tendency to eliminate borders and decorative designs. Bleed-type illustrations, extending to the edge of the page, became more prevalent. Rotogravure and other varieties of colour advertising were used more extensively and more photographs were reproduced in advertisements during 1937. The arrangement of some advertisements resembles somewhat the layout of a typical newspaper page, with a cluster of photographs accompanied by brief descriptions or captions.

**Advertising Mediums.**—In the United States, two new periodicals featuring photographic illustrations of current events acquired a combined circulation of more than 3,000,000 readers. This type of publication also became more popular in the United Kingdom. A few new magazines in the United States declined to accept ad-





Or seventy-five on the Watford By-Pass. You want a car that can compass either . . . without a murmur or a gasp at lowest speed, without "breathing" too hard at the highest. A car that can leap ahead at need but prefers to glide past less mobile traffic. A polite car that never appears to be making haste yet equally never needs any apologies by its owner. Proud of its behaviour as well as its thoroughbred looks, quietly sure that nothing else on wheels can make you envious, you take the wheel of such a car no longer guessing . . . no longer hoping. Now you *know*!

*Chrysler*

CHRYSLER MOTORS LIMITED • WORKS: MORTLAKE ROAD • Kew • SURREY

AMONG THE MAJOR OBJECTIVES of modern advertising copy, rhythm and compactness and especially an insistent regard for the consumer point of view stand out in this single-page British advertisement

vertising until circulation was established, others followed a consistent policy of excluding all advertising.

In the United Kingdom, the circulation of national morning newspapers, published in London but widely distributed outside the metropolitan area, continued to increase during 1937, while provincial newspapers generally retained their readers. There was a trend toward the development of two distinct types of newspapers; one publishing popular information about current happenings, the other featuring articles of the magazine type.

The production of moving picture films for advertising purposes increased during 1937. The two-reel talking film, frequently in colour, and a shorter film requiring about one minute for a showing, were used extensively in the United States. About 8,000 theatres contracted with film distributors to exhibit this latter type of film. In the United Kingdom, also, a growing interest in advertising films was apparent and they became available for use in private homes as well as theatres. Improvements in the technical processes involved in preparing advertisements were reflected in the superior quality of the finished product. Although radio stations in the United Kingdom do not broadcast advertising programs, three important stations on the Continent transmit programs in English for the benefit of British advertisers. A new radio station, which is available for this type of broadcast, was established at Toulouse, France, during 1937.

**Outdoor Advertising.**—Hoardings or poster boards in the United Kingdom became more attractive in appearance during the past year. National organizations were formed to control advertising space on networks of hoardings situated in various locali-

ties. In the United States, new methods were developed to determine the number of persons who observe window displays and outdoor advertising.

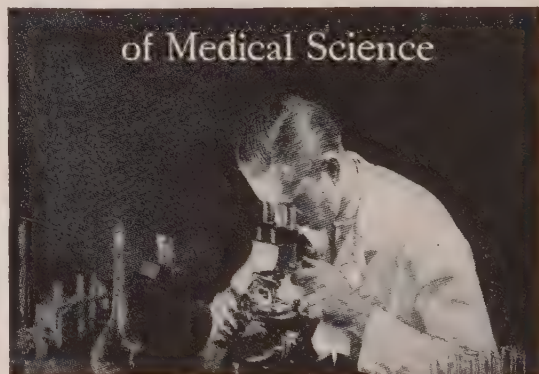
**Legislation.**—The Miller-Tydings Act, which was passed in the United States during 1937, provided that the Federal Anti-Trust Laws shall not invalidate contracts between manufacturers and distributors fixing retail prices in States where such contracts are permitted by State Fair-Trade Laws. Forty-two of the 48 States have passed Fair-Trade Acts, permitting but not requiring manufacturers to fix minimum retail prices. By encouraging competition between national and private brands of merchandise, this legislation has undoubtedly increased advertising for both types of products.

In the United Kingdom, the Select Committee on Medicine Stamp Duties, during 1937, proposed a stamp tax on medicines, drugs, and, possibly, cosmetics, amounting to about one-sixth of the retail price. If enacted, it is feared that this tax may reduce advertising appropriations.

**Ethics.**—The International Chamber of Commerce, in 1937, approved a code providing that advertising shall conform to laws and to religious, patriotic, moral, and aesthetic sentiments of the country where it is published; that advertisements shall contain no misleading statements about materials, ingredients, origin, price, value, suitability, or terms of purchase. Although this code has no force in law, it is generally recognized by large advertisers. In the United Kingdom, the code of advertising ethics recently adopted by the Institute of Incorporated Practitioners in Advertising is observed by many advertisers and advertising agencies.

In the United States, the Federal Trade Commission con-

## "G-MEN"



MORE lives have been saved by the "G-Men" of medical science than were destroyed by Alexander, Caesar, Napoleon, and all the other would-be world conquerors put together. Perhaps you, yourself, are alive and well because Pasteur discovered the nature of germs; Jenner, the vaccine for small-pox; Wright, the preventive for typhoid; von Behring, the means for ending diphtheria.

The determination of these heroes is proverbial. For example, Ehrlich made 606 unsuccessful experiments before he discovered "606"—now used in the treatment of early syphilis.

Many outstanding "G-Men" of medicine have received recognition for their great victories. Many more, unknown and unsung, are giving their lives to exploring, probing, unearthing the secret causes of disease. You hope, with everybody else, that these scientists will discover how to prevent or cure cancer; how to stop the destructive waves of influenza; how to check the early onset of heart disease.

Scientists are already producing effective serums to combat several common types of pneumonia. For the remaining types, they may soon have either effective serums for treatment or a vaccine for prevention. They have made great strides in the fight against tuberculosis. They now treat successfully certain types of blood infection formerly regarded as deadly.

The "G-Men" have shown us how to control diabetes with insulin, and pernicious anemia with liver extract. Today they are perfecting methods to ward off or lessen the severity of whooping cough, scarlet fever, anthrax, hay fever, and other diseases which have baffled doctors throughout the centuries.

Largely because of their work, the average length of life of children born in the United States this year is expected to be at least 61 years, although the children born in 1900 could hope for about 49 years and those born a century ago, considerably less. Thanks to the "G-Men" of medical science, you live in an age when more has been done to protect human life from disease than ever before, and you dwell in a community which may profit from their tireless research. You can prove your gratitude by warmly cooperating with health officials, physicians, civic organizations and hospitals that bring these great discoveries to you and your neighbors.



METROPOLITAN LIFE INSURANCE COMPANY  
1 Madison Avenue, New York 17, N. Y.

Please send me free "Health Heroes" booklets which I have checked  
☐ "Little Partner" ☐ "Edward Jenner" ☐ "Robert Koch"  
☐ "Walter Reed" ☐ "Edward Livingston Trudeau"

NAME \_\_\_\_\_ ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_

**METROPOLITAN LIFE INSURANCE COMPANY**  
 FREDERICK H. ECKER, Chairman of the Board ONE MADISON AVENUE, NEW YORK, N. Y.  
 LEROY A. LINCOLN, President  
 Copyright 1937 by Metropolitan Life Insurance Company

LAYOUT OF ONE-PAGE, institutional-type advertisement, showing the trend to eliminate borders and purely decorative designs and to make a direct, popular appeal



## OFTEN A BRIDESMAID BUT NEVER A BRIDE!



Edna's case was really a pathetic one. Like every woman, her primary ambition was to marry. Most of the girls of her set were married—or about to be. Yet not one possessed more grace or charm or loveliness than she.

And as her birthdays crept gradually toward that tragic thirty-mark, marriage seemed farther from her life than ever.

She was often a bridesmaid but never a bride.

That's the insidious thing about halitosis (unpleasant breath). You, yourself, rarely know when you have it. And even your closest friends won't tell you.

Sometimes, of course, halitosis comes from some deep-seated organic disorder that requires professional advice. But usually—and fortunately—halitosis is only a local condition that yields to the regular use of Listerine Antiseptic as a mouth wash and gargle. It is an interesting thing that this well-known antiseptic that has been in use for years for surgical dressings, possesses these unusual properties as a breath deodorant.

Listerine Antiseptic halts food fermentation in the mouth—a major cause of breath odors—then overcomes the odors themselves. The breath, indeed the entire mouth, becomes sweeter, fresher and purer. Use Listerine night and morning and between times before social and business engagements.

LAMBERT PHARMACAL CO., St. Louis, Mo.



**LISTERINE**  
CHECKS HALITOSIS (BAD BREATH)

THE IDEA IN THIS ADVERTISEMENT was first used thirteen years ago. A modern touch by the Lambert and Feasley Agency made it conspicuously effective in 1937

continued to examine newspaper and magazine advertisements. One of the commission's duties is to see that dishonest advertising is either corrected or discontinued. The American Association of Advertising Agencies, in 1937, proposed a code governing the advertising of proprietary medicines. This code provides that relief of symptoms shall be emphasized rather than complete cures; that diseases too serious for self-medication shall not be mentioned in advertising; and that advertisers shall assume full responsibility for proving their claims.

**Consumers.**—In the United States, the National Retail Dry Goods Association sponsored, during 1937, the Consumer-Retailer Relations Council. The objective of this group, which is composed of representatives of national women's organizations, large retailers, manufacturers, and Federal Government bureaus, is to encourage accurate, informative labels, uniform terminology meaning the same to dealer and consumer, truthful local and national advertising. One of the leading magazine publishers organized a consumers' division for the purpose of providing consumers with

accurate information about advertising and advertised products. The National Association of Manufacturers, during 1937, prepared a series of advertisements designed to interpret business to consumers. In the United Kingdom, as well as in the United States, there was a growing interest in scientific tests to determine the relative merits of competing products. To make advertising more useful to consumers and more effective for advertisers, the Institute of Incorporated Practitioners in Advertising in the United Kingdom, and various organizations in the United States, eliminated much of the guesswork from advertising by means of scientific research. Reliable methods have been developed to estimate the size of radio audiences.

Consumer preferences for both advertising and merchandise have been extensively analyzed during 1937 by such means as coupons, questionnaires, and personal interviews.

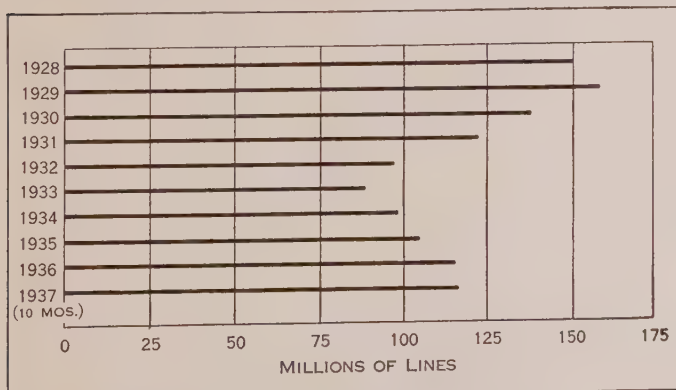
**BIBLIOGRAPHY.**—Among the year's outstanding books on advertising and related subjects were *Principles of Advertising*, H. K. Nixon; *Problems in Advertising*, Neil H. Borden; *Market Research and Analysis*, Lyndon O. Brown; *Radio Advertising in Australia*, W. A. McNair; *How To Write Advertising*, Kenneth M. Goode; *Modern Publicity*, 1937-38, The Studio Publications, Inc. (D. St.)

**Aeronautics.** Several countries were preoccupied during 1937 with military aviation. In Great Britain, new factories began to deliver craft under the rearmament scheme, and leading features are now available of several well-known warplanes, e.g. the *Battle*, *Blenheim*, *Harrow*, *Wellesley* ("geodetically" constructed), and *Whitley*.

In civil aeronautics, the year established the Short Empire flying-boat as an exceptionally good commercial aircraft whose originality of design should stimulate development. Five double journeys across the Atlantic were made by two of these 18-ton 200m.p.h. craft, fitted with special fuel tanks, between July and September. A fleet of 28 was put into construction.

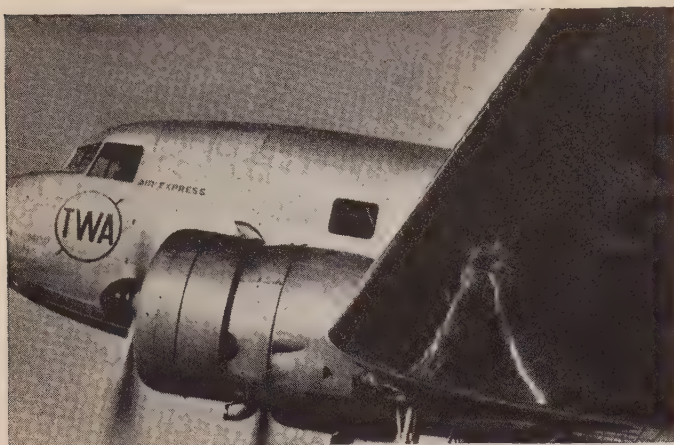
Interest in trans-oceanic and other long-range flying is reflected in several other aircraft constructed during the year, e.g. the Boeing 72-passenger flying-boat, the 2,100h.p. De Havilland Albatross aeroplane (to be flown experimentally across the Atlantic and otherwise used as a 22-passenger air-liner), and the 5,000h.p. 27-ton Douglas. Of outstanding novelty is the Mayo composite aircraft. In the Short-Mayo prototype, the long-range craft is a 9-ton seaplane with small wings. Its low power (1,300h.p.) and heavy wing-loading (33lb. per sq.ft.) promise a cruising speed of 160-170m.p.h., but render independent take-off impossible. It is carried into the air, with all engines working, on the back of a lower component closely resembling an Empire flying-boat. But the shapes and incidences of the wings are so chosen that, on attaining a suitable flying speed, the seaplane supports its own weight and part of that of the flying-boat as well. Thus a mutually repulsive force is automatically generated to ensure rapid separation of the two components when an anchor mechanism between them is released at a suitable altitude.

Despite consequent high landing speeds, wings are still being diminished in area for given load in order to reduce skin friction and economize in structural weight, the latter being especially important, according to a recent American analysis, in connection with long range. "Split" flaps, whose value in decreasing high landing speeds was first demonstrated in the London-Melbourne race of 1934 (though they were invented 12 years previously), have been improved upon in many ways since. During 1937, preliminary experiments under the Government of India suggested that slots cut through the wings should delay the sharp stall of split flaps, and permit their safe extension along the span, sliding shutters replacing ailerons for purposes of lateral control. An addition to the series of Fairey flaps—one of retractable,



NEWSPAPER ADVERTISING (total linage in 52 cities of the United States): average per month. Compiled by Media Records, Inc.





View showing a NEW TYPE OF DE-ICING EQUIPMENT. All leading edges of the ship, including the wings, are fitted with rubber coverings which are so arranged that periodic pulsations of air through rubber tubing under the coverings break off the ice as soon as it forms. A slinger ring on the back of the propeller feeds an anti-freeze solution to the bare blades, thereby ending loss of efficiency due to the forming of ice on propeller blades

trailing-edge aerofoil type—has promised particularly high lift, with economy in operational effort. Tricycle under-carriages, familiar in pre-war days, have been re-introduced in modernized form for greater safety in high-speed landings, especially on runways slightly inclined to the wind.

New British and American engines have met a need for more powerful units, *e.g.* the ethylene glycol-cooled Rolls-Royce Merlin (990h.p.), the Bristol air-cooled sleeve-valve radial Hercules (1,150h.p.) and a double-row Wright Cyclone (1,500h.p.). At the Royal Aircraft Establishment, 2-speed superchargers have been tested to permit high altitude flying without excessive boosting at ground level. Projected fuels of even higher octane value than is now standard, together with corresponding engine modifications, promise reduction in the weight of large air-cooled petrol engines below the 1lb. per h.p. already nearly realized. This further postpones a wide adoption, for greater safety against fire, of the heavy-oil Diesel-type engines in which Germany leads. Ducted cooling has been developed sufficiently to recover, in favourable cases, more than one-half of the radiator losses, but the advantage is less with radial engines.

Three systems for de-icing—*viz.* (a) breaking away ice deposit, (b) squeezing a film of glycol from a reservoir over the exposed surface, and (c) painting with anti-freezing paste—have been under test by the Royal Aircraft Establishment on aeroplanes detailed to seek out deliberately bad weather conditions. While (c) should suffice for casual protection, both (a) and (b) may find use under severe conditions, remembering that the danger affects not only wings, for which (a) is specially suitable, but also many other parts, *e.g.* the wind-screen.

Modern aeroplanes are about twice as efficient as those of seven years ago, and substantial improvement is yet in store. Realization of this will demand an extension of aerodynamical knowledge, to which some interesting experiments have been directed. Measurements made in the compressed air tunnel should indicate more reliably the resistance of large wings under flying conditions, and eventually lead to a more accurate knowledge of skin friction with turbulent flow. Experiments on isotropic turbulence behind grids promise a better understanding of this difficult and important subject. Another investigation relates to the shock waves formed by high-speed aircraft, reminiscent of the "bore" which precedes a bullet. American photographs demonstrated such waves cast from an aerofoil at three-quarters of the speed of sound, while propeller-root interference may induce them to occur on aircraft at much lower speeds, say, 400 miles per hour. The

phenomenon is associated with sharp changes in pressure; it increases drag and tends to stall wings. The investigation aims at shaping aircraft parts to delay these effects, as has already proved possible under the extreme conditions existing near the tips of high-speed propellers.

At the turn of the year, Queen Mary college devised a new family of mathematical wing shapes which closely resemble the best forms indicated by experiment. These may prove useful whenever calculations of flow are required, *e.g.* in connection with the foregoing.

The tragic loss of the "Hindenburg" airship, after 37 Atlantic crossings, when landing at Lakehurst in May, is being made good in Germany, helium replacing hydrogen.

On June 30 Flight-Lieut. M. J. Adam flew a Bristol monoplane with a special "Pegasus" engine to an altitude of 16,440 metres (nearly 10½mi.), securing a world record for Great Britain. Regular flying at substratospheric altitudes has been organized in America, sealed cabins tapping oxygen stored in the wings. The international record for the longest flight in a straight line (10,148km., or more than 6,305mi.) was gained for Russia by Colonel M. Gromov, Comdt. A. Youmachev, and Engineer S. Danilin, flying an A.N.T. 25 monoplane from Moscow to San Jacinto, U.S., July 13–15. In November, Flying-Officer A. E. Clouston, with Mrs. Kirby Green, flew to the Cape in the D. H. Comet of London-Melbourne trophy fame in the record time of 45hrs. 6mins., returning in 57 hrs. 23mins. Miss Jean Batten won the International Aeronautical Federation's gold medal for the greatest flying achievement of 1937. (*See also AVIATION, CIVIL; AIRPORTS; AIR RACES, ETC.*) (N. A. V. P.)

**Afghanistan.** A Muslim kingdom lying between India and Persia, with an area of about 245,000 sq. mi. and a population of about 11,000,000. The ruler is H. M. Muhammad Zahir Khan since 1933. The country has been admitted a member of the League of Nations, and has now a constitution, with a Council of Ministers, a Senate (40 nominated members) and an Assembly (120 elected members). After the latest Afghan-British War of 1919, a treaty was signed by which Great Britain recognizes the complete independence of Afghanistan and exchanges Legations.

The capital is Kabul (pop. 80,000); Kandahar (60,000) and Herat (30,000) being the only other towns of importance. The official language is Persian, which is generally understood by the educated classes, although Pushtu is spoken in the south and east. No reliable statistics of the ordinary type are available, in respect of education, finance, agriculture, commerce or the like. There are no railroads in the country, but motor traffic is extending and various factory industries are being opened up. The trade with India through the frontier passes is considerable: exports being fruit, carpets, wool and skins: imports cotton and piece-goods, metals, sugar and tea. There is no record of the similar trade with Russia and Persia. The year 1937 was one of unusual quiet in this turbulent land. (ME.)

**A. F. of L.:** *see* AMERICAN FEDERATION OF LABOR.

**Africa, British East:** *see* KENYA; TANGANYIKA, etc.

**Africa, French Equatorial:** *see* FRENCH EQUATORIAL AFRICA.

**Africa, French West:** *see* FRENCH WEST AFRICA AND THE SAHARA.

**Africa, Italian East:** *see* ITALIAN EAST AFRICA.

**Africa, Portuguese East:** *see* MOZAMBIQUE.

**Africa, Portuguese West:** *see* ANGOLA.

**Africa, South-West:** *see* SOUTH-WEST AFRICA.

**Africa, Spanish West:** *see* SPANISH WEST AFRICA.

**Africa, Union of South:** *see* SOUTH AFRICA, THE UNION OF.



**Agriculture.** Among the most striking factors affecting agriculture in recent years are: the world-wide efforts to restore prices by increasing tariffs, establishing quotas for imports, giving bounties for exports, government restrictions on production and marketing, price fixing, and monetary changes. Governments are also giving increased attention to planning the uses of land for agriculture, forests, recreation, and other purposes. Better transportation is resulting in an increase in rural living, and part-time farming by persons who work at other occupations.

In the technical operation of farms, one of the striking changes is the improvement of the tractor and particularly the mounting of tractors and other farm machinery on pneumatic tires. Changes in cropping systems usually take place slowly, but the expansion of cotton production in countries other than the United States has been striking. The acreages of some crops such as fresh vegetables and soy beans in the United States and cocoa in Africa have increased rapidly.

Steady technical progress is being made on methods of production, particularly in disease control, and in the use of hybrid seed corn in the United States.

**Falling Prices.**—Wholesale prices of food products in seven countries, expressed in pre-war gold currencies, rose from an index of 100 before the World War to 226 for the year 1919. From this high level, two striking declines occurred, one in 1920, which carried prices to about one-third above pre-war, and a second in 1929, which carried prices to about one-third below the pre-war level. In 1934, prices in gold were less than one-third of what they were in 1919. The decline was world-wide for prices expressed in gold as shown in Table I. The decline was greater in regions far from market because costs of handling remained high. Prices of textiles rose even higher and fell lower. The index of wholesale prices of cotton, silk, wool, and other farm textiles rose to 301 in 1918 and fell to 55 in 1932, or more than four-fifths.

Whenever prices fall, prices of farm products and other raw materials decline more than debts, taxes, wages, transportation charges, prices of manufactured goods, and administratively set

Table I.—Index Numbers of Wholesale Prices of 18 Foods in Pre-war Gold Currencies, 1910-1937

(Pre-war = 100)

Year	United States	Canada	England	France	Netherlands	Belgium	Spain	World
1910	100	96	95	94	91	96	..	97
1911	96	94	96	101	99	99	..	97
1912	103	105	106	106	104	105	..	104
1913	99	99	100	100	99	101	99	99
1914	102	106	103	99	107	98	101	102
1915	110	120	135	118	133	..	108	117
1916	125	134	177	145	155	..	130	139
1917	185	195	233	204	185	..	172	195
1918	204	219	240	250	265	..	226	223
1919	214	218	242	261	254	..	201	226
1920	209	222	224	166	204	..	190	203
1921	113	126	165	138	146	134	134	130
1922	115	126	151	141	134	130	137	129
1923	122	126	156	130	130	118	130	130
1924	129	133	152	128	132	124	135	134
1925	145	147	159	130	145	137	156	146
1926	135	137	151	114	133	118	153	136
1927	135	140	149	126	129	121	175	140
1928	139	145	145	128	130	124	163	141
1929	132	143	139	126	128	123	145	134
1930	111	118	119	112	102	100	113	112
1931	82	84	91	105	79	79	92	88
1932	62	68	69	97	66	68	78	71
1933	54	57	62	89	65	65	75	64
1934	53	55	58	79	73	60	77	61
1935	64	59	56	68	72	54	74	64
1936	66	60	61	83	74	57	..	68
1937*	76	74	73	79	78	66	..	76

\*Prices for 1937 are preliminary figures.

Table II.—Price Disparity Caused by Rising and Falling Prices in the United States

(Pre-war = 100)

Year	Farm prices of food materials	Retail prices of the same foods	Cost of distribution	Cost of living	Earnings of New York factory workers	Farm taxes
1913	100	103	104	100	..	100
1914	105	106	105	102	101	101
1915	106	107	105	104	104	110
1916	117	117	110	112	116	116
1917	181	156	129	130	132	129
1918	200	180	159	158	164	137
1919	213	194	174	184	190	172
1920	207	207	202	205	227	209
1921	130	163	190	183	207	223
1922	121	150	175	169	202	224
1923	124	154	177	171	220	228
1924	126	153	180	171	223	228
1925	152	169	185	175	228	232
1926	154	174	192	176	234	232
1927	145	169	190	174	236	238
1928	149	170	190	171	237	239
1929	151	174	198	171	242	241
1930	129	169	196	166	232	238
1931	89	135	178	152	213	217
1932	64	109	153	138	183	188
1933	68	106	140	132	176	161
1934	82	122	158	136	187	153
1935	108	143	174	140	196	154
1936	116	146	171	143	204	157
1937*	125	154	181	147	223	..

\*Indexes for 1937 are preliminary.

prices. These relatively inflexible prices become of increasing importance with passing time. It is, therefore, more difficult than formerly to meet severe price declines.

With a high standard of living, there is always a high degree of division of labour. This means that farmers in such a society become less and less self-sufficient. They produce large quantities of products to which the area is well adapted and buy from others most of their business and living requirements. This increasing specialization makes the effects of falling prices more serious than formerly.

The effects of rising and falling prices on price disparity are illustrated by prices in the United States. With rapidly rising prices, prices paid for food products in the United States reached an index of 181, in 1917, when pre-war is 100. The index of the cost of distributing these same foods had risen to only 129, so



STACKING GRAIN before threshing on a farm near Perth in Scotland



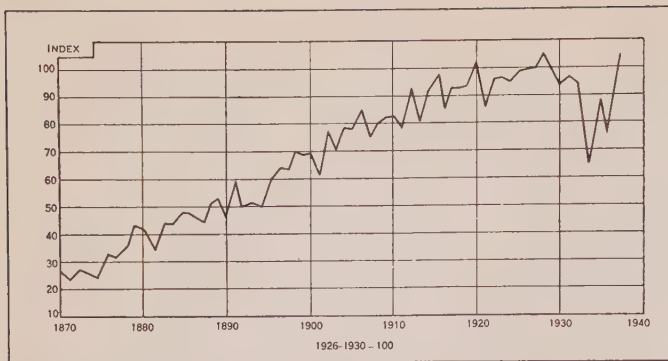


Fig. 1.—PHYSICAL VOLUME OF PRODUCTION OF ALL CROPS FOR THE UNITED STATES, 1870-1937. The long-time gradual increase was seriously interrupted by the depression as well as by the droughts of 1934 and 1936. Instead of high production during the depression, production was low

that retail prices of the same foods were only 156.

Costs of distribution are largely labour. The average weekly earnings of New York factory workers give a fairly good index of city wage rates. These had risen only 32% by 1917, which accounts for the small increase in costs of distribution. By 1920, farm prices had doubled, but costs of distribution had also doubled so that retail prices had about doubled.

With rapidly falling prices, there were relatively small declines in wages so that the costs of distribution remained high, and prices of farm products were low relative to retail prices for the same products. For example, in 1925, retail prices of food in cities were higher than in 1917, but the farm prices of the same foods were considerably lower than in 1917. This situation was further accentuated by the later collapse in prices.

In February 1933, food at retail was practically at the pre-war level, but farmers received only about one-half of pre-war prices, because wages and other costs of distribution had declined only a limited amount.

The price disparity, both with rising and falling prices, is greatest in regions far from market. Index numbers for prices in Australia, South America, Western United States, and Western Canada were higher during the periods of rising prices than for Eastern United States and Western Europe. When prices fell, they fell most severely in the outlying regions, because costs of distribution remained high.

Innumerable explanations have been advanced to explain the collapse in prices, such as overproduction, under-consumption, imports, monetary causes. Corresponding remedies have been attempted. One of the most popular explanations was overproduction. Those who held this point-of-view had observed that a large supply reduces prices.

They reasoned that, since prices were drastically reduced, there must be a drastic over-supply. Statistics of production of farm crops do not indicate any violent general overproduction either in the United States (fig. 1) or in the world. Here and there, there was an unusually large supply of something, due to favourable weather; but this is a frequent occurrence. After the depression had continued for a time, consumption of certain products such as cotton was reduced so that supplies accumulated; but this was a result of the depression and not its initial cause. The physical



WHEAT PRODUCTION in nine important countries of the world—a graphic representation

volume of production of crops in the United States and prices of these products are shown in fig. 2. There was no increase in the output of farm products that could have caused the depressions of 1920 and 1929.

The rise and collapse in prices occurred in all gold-standard countries. A similar simultaneous rise and collapse did not occur in silver countries. The rise and collapse also varied in different countries depending on the monetary procedures followed. The depression of 1920 did not occur in countries that were inflating their currencies at that time.

Nearly all countries attempted to cure declining prices by reducing or prohibiting imports. This strong wave of nationalism not only checked the normal flow of international trade, but also stimulated attempts to produce farm products not well adapted to the region in order that each country might be self-sufficient. This movement had serious consequences which will continue for many years. It was not the initial cause of the depression but came as a result of it, and increased its severity.

Most countries tried some scheme for limiting production. Denmark and Holland limited the number of pigs that could be raised for sale. Holland destroyed tulips; Brazil destroyed coffee. The United States plowed under cotton and slaughtered pigs. Innumerable schemes for quotas for production and marketing were tried. Sometimes the limitation of production in one country caused an increase in another country. The United States plowed under one-fourth of its cotton crop in 1933; held a portion of the crop off the market; and limited the acreage planted in 1934. For many years, other countries had been producing a little less than half the world supply. A rapid expansion took place and production in other parts of the world in 1937 was nearly 50% higher than the production in 1933. (See Table III.) A part of the expansion in other countries undoubtedly was due to the restriction of production in the United States.

**Gold Standard.**—Those who believed that the depression was due to under-consumption advocated the redistribution of purchasing power by giving money to certain groups in the population, by

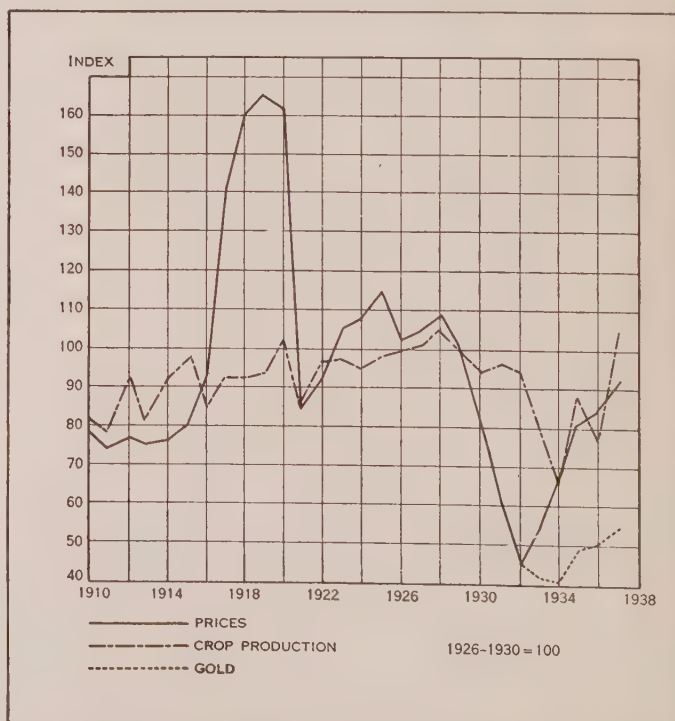


Fig. 2.—PHYSICAL VOLUME OF PRODUCTION OF CROPS IN THE UNITED STATES AND PRICES OF CROPS, 1910-1937. Production was generally low during the period of low prices

make-work programs, or by compulsory wage increases. Those who believed that the depression was due to the rising value of gold advocated a reduction in the gold content of the monetary unit. Every gold-standard country reduced the gold content of its currency by devaluation or by leaving the gold standard. In general, those countries that were primarily agricultural and were far from market made the greatest reduction in the metallic content of their currencies. Before 1938, Australia and New Zealand had reduced the gold content of their currencies by about one-half. The Argentine reduced the gold content of the peso by about 55%. The United States and England made reductions of about 40%. In January 1938, very few countries were on the gold standard, so that the reductions were not specific.

Appraisal of the innumerable relief efforts will gradually be made after the controversies have passed. In general, those countries that left the gold standard at a time when prices in gold were declining stopped the price decline. Those countries that left the gold standard at a time when prices were not changing violently had a rise in prices. The latter type of adjustment is shown by the experience of the United States (fig. 3). The United States left the gold standard and began to raise the price of gold at a time when commodity prices were declining gradually. Prices in currency rose rapidly. (See also GOLD RESERVES AND GOLD STANDARD.) Even after the price decline in the latter part of 1937, United States prices of 40 basic commodities were 77% higher than for February 1933. The type of adjustment that took place in the price structure is shown by a comparison of the prices paid to farmers for food and the cost of living. The cost of living index is very resistant to price declines because it includes so many wages and other slow-moving charges. Although prices paid to farmers for food products in December 1932 declined to 57, when pre-war is 100, the cost of living index stood at 132. With rising prices, prices paid to farmers in June 1937 had more than doubled, but the cost of living index had risen only 11% (fig. 4). Not hav-

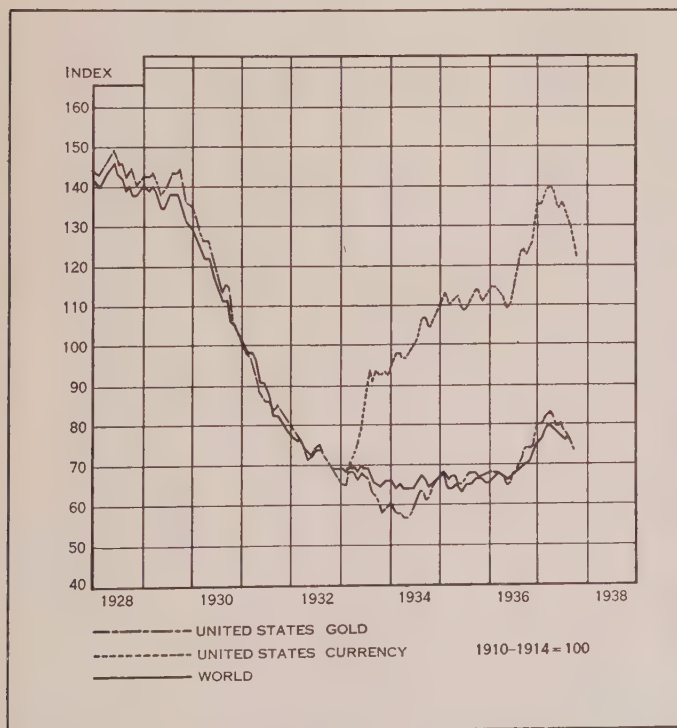


Fig. 3.—INDEX OF 40 BASIC COMMODITIES IN THE WORLD AND THE UNITED STATES IN GOLD, AND IN THE UNITED STATES IN CURRENCY, 1928-1937. Commodity prices in the United States followed the world level until 1933 when the United States raised the price of gold. Since 1934, commodity prices in the United States have been about 69 per cent above the world level

Table III.—Cotton Production in Bales of 478 lbs.

Crop year	Production			Per cent. in other countries
	United States	Other countries	World	
	ooo bales	ooo bales	ooo bales	
1916-17	11,448	8,452	19,900	42
1917-18	11,284	8,416	19,700	43
1918-19	12,018	8,672	20,690	42
1919-20	11,411	9,889	21,300	46
1920-21	13,429	7,671	21,100	36
1921-22	7,945	7,489	15,434	49
1922-23	9,755	9,507	19,262	49
1923-24	10,140	9,555	19,695	49
1924-25	13,630	11,300	24,930	45
1925-26	16,105	11,826	27,931	42
1926-27	17,978	10,439	28,417	37
1927-28	12,956	11,075	24,031	46
1928-29	14,477	12,286	26,763	46
1929-30	14,825	11,846	26,671	44
1930-31	13,932	12,189	26,121	47
1931-32	17,097	10,499	27,596	38
1932-33	13,003	10,937	23,940	46
1933-34	13,049	13,651	26,700	51*
1934-35	9,636	14,164	23,800	60
1935-36	10,638	15,862	26,500	60
1936-37	12,387	17,813	30,200	59
1937-38†	17,350	20,100	37,450	54

\*In 1933, the United States is reported to have plowed under 4,400,000 bales. If this had not been done, the proportion of the total crop grown in other countries would have been 44 per cent.

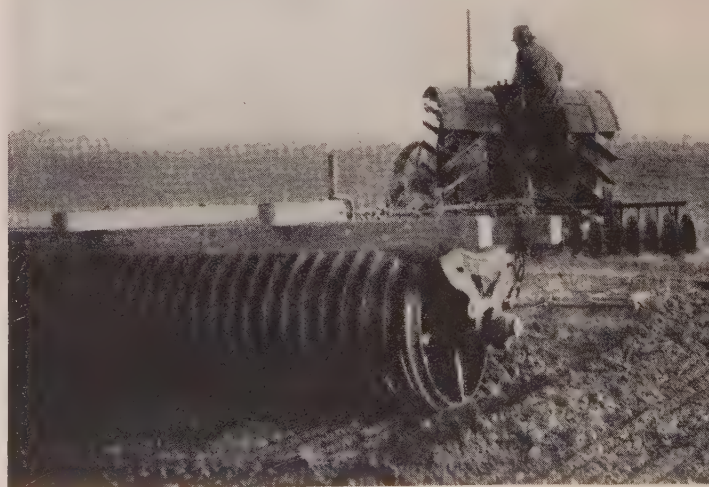
†Figures for 1937-38 are preliminary.

ing fallen much, the cost of living index had little occasion to rise much. The cost of living in 1937 was high compared with prices paid to farmers.

A further rise in prices would bring the two into balance. A still further rise from that point would leave farm prices high when compared with the cost of living.

The tariff and quota regulations to prevent imports in various countries are so numerous as to make any brief discussion impossible. With rising prices, there is a tendency to make slight reductions in the severity of some of these provisions.

**Drought and the Dust Bowl.**—Most of the rainfall of the central plains of the United States and Canada is carried north from the Gulf of Mexico. The farther from the Gulf, the less the rain. There is a large area east of the Rocky mountains but west of the Gulf of Mexico which is not in a direct line of winds coming from



THREE POWER-FARMING OPERATIONS in one, discing, harrowing and rolling, on a New Zealand farm



the Gulf. This area, particularly the part west of the 100° meridian, is generally short of rain and is subject to extreme variation in the amount of rain. For ages, this area has been subject to wind erosion.

In fact, much of the best soil in the area and considerable land east of the dry belt is loess, or wind-blown soil. Severe droughts in recent years have called attention to the dust storms, particularly when clouds of dust floated at high elevations over New York city. Such storms are new to the present generation but occurred in the early pioneer days when droughts were severe. The amount of blowing has been accentuated by the droughts of 1934 and 1936 and by the plowing of large areas. It is now generally conceded that it was a mistake for the Government to encourage the breaking up of these lands for tillage purposes. Unfortunately, the re-establishment of the native grasses is a very slow process, and the farms would need to be much larger if they were to depend on grazing.

Two of the severest droughts since the settlement of the West occurred in 1934 and 1936. The corn crop of 1934 was the lowest yield per acre harvested ever reported, and the second lowest yield occurred in 1936. Large areas were a complete failure, so that the yields per acre planted were even worse than the statistics indicate. (See also DUST STORMS.)

Since most of the agricultural production of the United States is in the area with continental climate and much of it is in the high plains area east of the Rocky mountains, crop yields are decidedly variable. For example, less than 41,000,000 ac. planted to winter wheat for the 1925 crop produced 401,000,000 bushels. The next year, a slightly smaller planting produced 632,000,000 bushels. A larger planting in 1933 produced only 351,000,000 bushels.

The cotton crop of 1937 was nearly 19,000,000 bales, the largest on record. If the yield per acre planted had been no better than the yield in 1923, the crop would have been less than 10,000,000 bales. Variations in production are due more to variations in yields than to acreage planted.

**Land Planning.**—The agricultural depression had turned the attention of many Governments to various phases of land planning, particularly to reforestation and rural homes for urban workers. Forests have many uses aside from the production of lumber. They hold back rain and snow and thereby regulate stream flow, reduce erosion, provide hunting and recreational facilities, and are of value in many other ways that do not accrue to the individual owner but are of benefit to the country as a whole. The necessities of the individual owner sometimes require that he cut the lumber before it should be cut and in a manner that does not adequately provide for the future. For these reasons, most countries are moving towards public ownership of considerable tracts of forest lands. Some countries do not allow the private owner to cut the trees without a permit. The State of New York had at one time practically disposed of all the land of the State. During the past fifty years, it has reacquired more than ten per cent of the area of the State for forest and recreational uses. The United States Government discontinued disposing of forest lands some years ago and has now turned to a policy of reacquiring lands for reforestation and recreational uses. (See also FORESTRY AND REFORESTATION.)

In most countries, the Governments have taken steps to encourage small land holdings. These are often called farms but are usually too small for efficient operation. They are efficient when used for homes for persons who work in industry. This movement has been greatly accentuated in the United States by the building of good roads and the general use of automobiles. The increase in efficiency tends to reduce the portion of the population living on farms. The movement for rural homes for urban workers tends

to check the decline in rural population. The automobile is also making rural recreation more available to urban workers. By these means, the balance between the rural-minded and urban-minded may be better maintained. The movement for rural living for the urban worker promises to go much farther. By rural living, the cost of living may be reduced and supplementary work provided for members of the family not working in industry and work may be provided for the industrial worker when not fully employed. Many persons prefer the greater freedom and "elbow room" which rural living makes possible.

**Technical Developments.**—Better control of plant disease is making rapid progress through use of seed that is free from disease, seed treatment, use of disease-resistant varieties, spraying, and the like. One of the striking cases is the rapid increase in the use of certified seed potatoes. Such potatoes are mostly grown in northern areas with a cool climate. The fields are inspected during the growing season by pathologists of the experiment stations. If plants pass the various inspections, the seed is certified. A high percentage of the potato area in the United States is now planted with such seed.

Potatoes show striking increases in yield per acre. The average yield in the United States for the 20 years, 1918 to 1937, was 108.8 bu.; and for the 20 preceding years, it was 95.3 bushels. In the 56 years; from 1866 to 1921, there were only 9 years when the average yield exceeded 100 bushels. Since 1921, there has been no year when the yield was less than 100 bushels. This increase is due to better seed, disease control, use of fertilizer, and the like. It is also due in part to the expansion of potatoes in areas better adapted to their production, and the contraction of production in the less favourable areas. (See also POTATOES.)

Another spectacular development, which is just coming in, is the use of hybrid maize or Indian corn seed. Corn is normally cross-fertilized by the abundance of pollen produced by the surrounding plants in the field. In producing hybrid seed corn, the plant is artificially self-fertilized for several generations until the strain is considerably purified. Another strain is similarly self-fertilized. These are then planted so that they will cross-fertilize to produce the hybrid seed. The self-fertilized plants are reduced in vigour, but seed produced from the first hybrid cross has remarkable vigour and usually greatly out-yields ordinary corn. Since the amount of corn required to plant an acre is small, it is possible to go to considerable expense for the continuous maintenance of in-bred strains and the production of hybrid seed. Corn often has a high moisture content and is frequently seriously injured for seed purposes by freezing when moist. Those who produce hybrid seed have facilities for drying and storing the hybrid

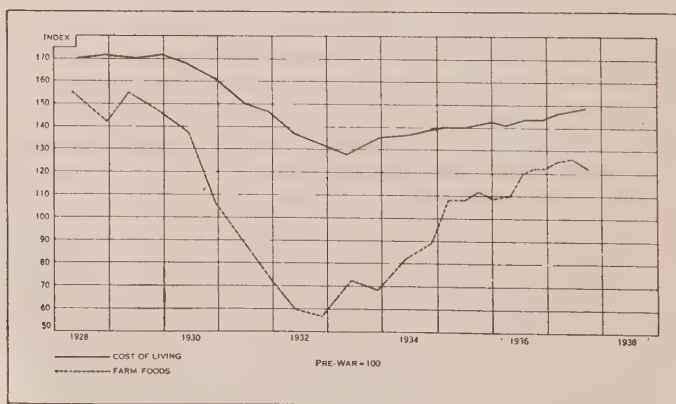


Fig. 4.—INDEX NUMBERS OF THE COST OF LIVING AND FARM PRICES OF FOOD IN THE UNITED STATES, 1928-37. From 1929 to 1932, the cost of living fell 23 per cent, whereas farm foods fell 61 per cent. From December 1932 to June 1937, the cost of living rose only 11 per cent, but farm foods 123 per cent

Table IV.—Occupations of Gainfully Employed Persons

Occupation	United States (1930)	Canada (1921)	Great Britain (1931)	France (1931)	Belgium (1920)	Netherlands (1920)	Germany (1933)	Denmark (1930)	Australia (1921)	New Zealand (1911)	Bulgaria (1926)	India (1901)	Total omitting Bulgaria and India
Agriculture . . .	10,471,998	1,041,457	1,352,067	7,578,986	470,600	622,514	9,174,863	541,221	483,535	111,116	2,456,383	195,668,204	31,849,257
Fish . . .	73,280	27,091	45,499	66,747	2,006	19,597	29,731	14,235	7,703	925	8,038	..	287,714
Forestry . . .	177,189	39,815	..	58,447	7,058	..	138,191	4,270	30,280	3,370	..	..	458,626
Extraction of minerals . . .	984,323	51,063	1,094,024	440,677	224,595	46,686	885,096	..	66,766	14,775	7,821	..	3,808,905
Food industries . . .	536,048	49,217	267,523	541,671	78,128	177,485	1,629,045	48,508	83,914	11,505	51,570	16,821,800	3,423,044
Textiles . . .	1,995,283	96,261	1,682,047	1,921,596	361,701	190,560	2,188,290	52,534	119,912	26,117	79,518	11,214,158	8,544,310
Leather . . .	382,507	25,296	258,934	299,923	55,547	38,423	568,498	14,185	..	..	6,126	3,241,935	1,043,313
Manufacture of minerals . . .	3,233,512	148,724	2,062,283	1,908,679	317,293	261,971	3,616,990	89,378	87,041	11,526	55,045	5,853,071	11,737,397
Printing . . .	343,597	25,030	326,530	154,810	18,277	25,548	14,806	..	..	..	5,350	114,410	1,194,052
Other manufactures . . .	4,741,604	317,190	1,305,716	1,124,858	225,331	95,484	1,624,257	130,638	130,005	47,590	18,258	6,761,228	9,022,592
Building . . .	2,968,101	185,202	757,607	886,138	185,774	190,093	2,070,501	35,028	122,002	39,079	54,828	1,668,557	7,439,169
Trade . . .	5,573,728	359,221	2,625,077	2,057,121	211,324	271,718	3,224,214	133,229	130,135	55,822	58,559	2,990,773	14,821,580
Transport . . .	3,843,147	247,410	1,830,231	927,752	355,016	261,577	1,551,901	91,503	207,737	39,433	40,491	3,571,032	9,352,797
Professional . . .	3,233,884	189,198	965,355	757,117	116,017	224,026	1,813,736	64,062	201,319	32,716	57,501	5,056,293	7,618,330
Domestic . . .	4,952,451	214,552	2,628,542	1,143,302	160,081	221,935	2,032,364	238,932	220,167	44,575	44,868	10,717,500	11,856,101
Clerks . . .	4,025,324	..	1,522,154	..	..	..	63,100	..	..	..	..	..	5,610,578
Finance . . .	507,739	61,301	142,308	288,983	..	46,295	393,082	12,795	44,874	9,940	..	1,200,998	1,507,317
Public service . . .	856,205	94,541	312,843	1,196,901	173,037	..	884,920	17,613	..	..	68,948	5,608,185	3,536,120
Undefined workers . . .	..	..	1,875,037	258,058	170,529	28,451	183,450	263,845	..	10,803	68,183	18,091,364	2,790,173
Total . . . . .	48,829,920	3,173,169	21,054,686	21,611,835	3,133,214	2,722,407	32,296,074	1,830,872	2,296,290	454,117	3,079,596	289,187,508	137,402,585

seed, so that results of better care of the seed further increase the yield.

The increased yield is generally approximately in proportion to the base yield. In areas where corn yields are fairly high, an increase of as much as 10 to 15 bushels per acre is not uncommon. Such seed is not much used in regions with low yields. (See also CORN.)

Changes in the average yield per acre of any crop in any nation take place slowly. It is therefore very easy to overemphasize such changes based on results from certain farms or laboratories. It does seem possible that hybrid seed corn, the use of which is rapidly spreading in the corn-belt, may increase the yield of the entire corn-belt by several bushels per acre. If so, it will be unusual and spectacular. However, no increase is yet evident for the country as a whole. But an increase of several bushels per acre in the better parts of the corn-belt is not improbable, and some farmers are already profiting greatly by the use of such seed, and others, by its production.

**Internal Combustion Engine.**—The increasing use of tractors, trucks, and automobiles is profoundly affecting agriculture. The automobile and truck have reached a stage of development where the changes from year to year are moderate. The tractor is still in the stage of rapid development. The most striking recent development is the use of pneumatic tires, not only on tractors, but on various farm machines. One of the effects of the uses of tractors, trucks, and automobiles is the permanent reduction in the number of horses in the United States. The developments that have thus far occurred have practically eliminated horses from cities and industrial plants and have reduced the

number of horses on farms by about one-half. The number of mules on farms has been reduced much less, because the tractor is too large a tool to be used in the South where the mule is primarily used. In 1900, there were nearly five horses on farms for each mule, but by 1937, there were less than three horses for each mule.

The reduction in the number of horses is resulting in some reduction in the number of acres of oats and hay. The excellent market for hay near large cities has disappeared. A reduction has occurred in the price of oats in terms of other farm products.

Timothy hay was preferred for horses but is less valuable than clover or other leguminous hay for cattle. A shift is therefore occurring in the type of hay produced. On the basis of tons produced, alfalfa is now the leading type of hay in the United States. In 1937, it represented 37% of all tame hay.

The tractors, trucks, and new machinery are increasing the disadvantage of farms that are too rough or too stony or for other reasons are not adapted to machine operation. They are making it possible to operate farms at a greater distance from the farmstead. The truck is greatly facilitating the marketing of farm products. About half the use of farm automobiles is for business use. This greatly facilitates the marketing of farm products and the purchase of supplies.

**Population Engaged in Agriculture.**—With passing time, the percentage of the population engaged in agriculture steadily declines. Farmers become more efficient, so that fewer of them are needed to feed a given population. This released population going into the production of other things is an important factor raising the standard of living.

Table V.—Percentage Distribution of Occupations of Gainfully Employed Persons

[illegible]





HERDING SHEEP in New South Wales, Australia

The countries with the greatest division of labour have the greatest efficiency per worker, and consequently the highest standard of living.

The percentage of the population engaged in agriculture in countries that produce most of their own food supply varies from 21 per cent in the United States to 68 per cent in India. In the United States, 83 per cent of the population was engaged in agriculture in 1820. (See also CROP CONTROL; FERTILIZERS.)

(G. F. W.; F. A. Pe.)

**Agriculture, Department of:** see GOVERNMENT DEPARTMENTS AND BUREAUS.

**Air Conditioning.** The year 1937 marked a substantial advance in the total installed horse-power of air-conditioning apparatus, as well as a rapid expansion in the general acceptance and understanding of the art. The following table outlines the growth of air conditioning during the last few years:

Year	Horse-Power Installed
Prior to 1933 .....	170,000
1933 .....	20,000
1934 .....	50,000
1935 .....	72,000
1936 .....	88,000
1937 .....	147,000
TOTAL .....	547,000

From the above it will be seen that the total installed horse-power is now well over the half million mark; that the additional horse-power added in 1937 is nearly as much as the total installed prior to 1933, and that 1937 represents about a 60% increase over 1936.

A number of definite trends are particularly important in the industry, as follows:

(1) **Unit Conditioners.**—It has been a generally accepted fact that the built-in central plant system provides the best performance at the lowest cost wherever a number of rooms, or where one large room is to be air conditioned. This is still true, but quite recently unit air conditioners of improved design and of

relatively low cost have been produced, which give excellent performance in single rooms. The smaller of these conditioners are air cooled and have capacities somewhat less than one ton. (A ton of capacity is equivalent in cooling effect to the melting of one ton of ice in 24 hours.) Such a conditioner embodies a refrigerating unit, blowers, control and filters, all mounted in a cabinet of pleasing appearance, and it is entirely portable, except for a duct connection to the window, in order to supply outside air for condenser cooling and ventilation. This conditioner cools, dehumidifies, circulates, and cleans the air in the room, as well as providing outside ventilation air for odor control. It is designed primarily for single rooms in homes and apartments, as well as for private offices.

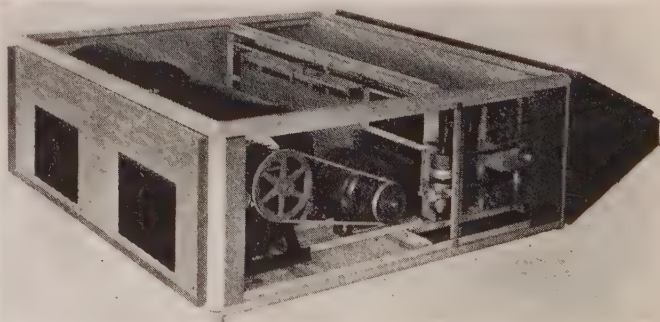
Also, there are larger unit conditioners available up to several tons capacity, for use in small stores and shops, as well as large offices. These are quite similar to the ones just described, except that they are water cooled instead of air cooled. Also, they are designed to deliver the conditioned air in a horizontal plane, about eight feet above the floor, where—because it is heavier than the air in the room—it falls slowly to the floor, giving even distribution without objectionable draft.

(2) **Central Plant Conditioners.**—The built-in central plant system is still the standard and proved method of air conditioning for most applications, although they have until recently presented the problem that no two conditioners are exactly the same. Each must accurately fit the application in number of included functions, capacity of each function, air flow, pressure drop, and power supply. Therefore, the usual procedure was to purchase various parts from the most convenient suppliers and assemble them on the job. Hence, there was divided responsibility and lack of skilled factory design and testing of the unit as a whole.

Today the reliable manufacturer, by means of a relatively few ingeniously designed sub-assemblies, makes available many thousands of combinations. Thus, the purchaser receives a central plant air conditioner which is custom fitted to his exact requirements, and at the same time it is completely factory designed, factory built, and factory tested. The responsibility for its successful performance is undivided.

(3) **New Applications.**—There is now an established trend toward air conditioning in the home. A great majority of the new homes built above the \$7,500 class, and many below this class, install winter air conditioning, with all the advantages of heating, humidifying, circulating and filtering. Many of these homes either install summer air conditioning with cooling and dehumidifying, at the same time, or they make provision for adding it later, using the blower, filters, ducts, and grilles of the winter conditioning system.

Air conditioning for large stores and theatres has long been established, but now it is rapidly spreading to even the very small stores and theatres, as a sure way to attract more trade



INTERIOR VIEW OF LARGE AIR CONDITIONER for central installation, showing humidifying apparatus and motor for diffusing fresh, cool or warm air



and increase profits. Two relatively new classes of application are apartments and hotel guest rooms. Both of these are growing rapidly, using unit conditioners for one or two rooms, and central plant conditioners for a group of rooms.

(4) **Benefits of Air Conditioning to Health.**—The benefits of air conditioning to health are not yet fully identified, although knowledge on this subject is improving. The benefits to hay fever and pollen asthma sufferers are well known. The benefits to convalescents and post-operative patients are becoming more and more understood. It is indicated that air conditioning may go a long way toward eliminating the inconvenience, lost time, and suffering which come from the common cold. Air conditioning does not directly kill bacteria, nor does it produce sterile air. It does, however, substantially reduce the bacteria count in the air, to the point where the natural body immunity can usually fight off the ravages of the remaining bacteria. (EL. HA.)

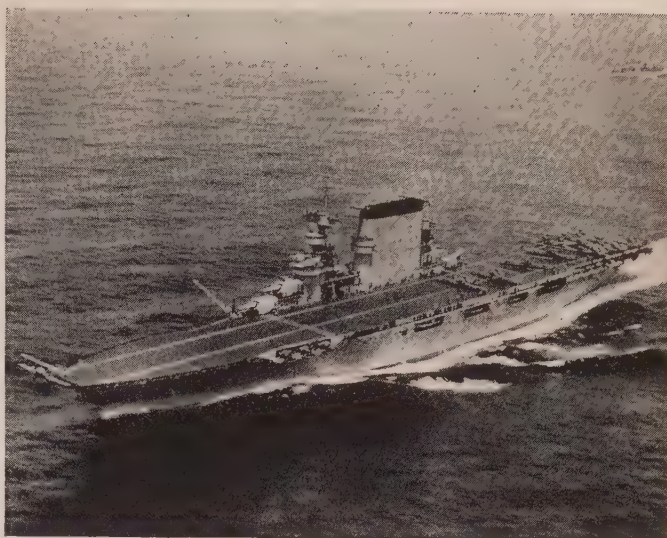
**Aircraft Carriers:** see AIR FORCES; LONDON NAVAL CONFERENCES; NAVIES OF THE WORLD; REARMAMENT.

**Air Forces.** Air forces constitute a highly mobile and powerful combat element which, in co-operation with other arms, or independent thereof, conducts the air operations required for carrying out the missions of the army. The essential characteristics of air forces are mobility, and the power to observe and to attack objectives on land, at sea or in the air. Aside from hostile counter missions this power is limited only by the radius of action of the air forces.

Air forces are divided according to the purpose for which their constituent aircraft are designed, into the following classes: (a) *Bombardment aviation* is equipped, organized and trained to destroy material objectives. It is capable of applying its destructive power effectively to a wide variety of objectives, such as naval vessels, bridges, dams, railroads, buildings, and other substantial structures. (b) *Attack aviation* is equipped, organized and trained primarily to destroy personnel and light material objectives. It is suitable for employment against troops on the march, in camp, in bivouac, in light shelter, in boats or small ships. (c) *Pursuit aviation* is equipped, organized and trained primarily for air combat. It is employed to support bombardment, attack and observation aviation; for interdicting enemy bombardment and attack aviation; and to deny operations to hostile observation aviation. (d) *Observation aviation* is equipped, organized and trained to observe and report upon all activities which are visible from aircraft and of interest to a military commander. *Transport* and *training aviation*, the two additional types, are non-combat classes.

Air forces in the United States comprise: (a) those assigned to and constituting the GHQ air force, (b) those assigned to and constituting an integral part of corps and armies, (c) those assigned to each of the overseas departments; and (d) those assigned to the zone of the interior. The General Headquarters Air Force combines the air corps tactical units in the continental limits of the United States. The commanding general of that organization directs and supervises the training activities and tactical manoeuvres of that force. The thorough and efficient work performed by the GHQ air force has resulted in a present high state of tactical proficiency, stressing individual combat crew performance. Training concludes with tactical manoeuvres involving the transfer of groups and wings from coast to coast to perfect tactical mobility.

The chief of the air corps directs the aeroplane, engine and accessory procurement activities, builds and defends the budget, and supervises the technical training of air corps personnel. He is also charged with the procurement, classification, and evaluation of all personnel in the army air corps. He advises the war



AIRCRAFT CARRIER, U.S.S. "Lexington"

department on aviation matters.

A wide divergence of opinion has been expressed regarding the size and effectiveness of military aviation in the United States. One view holds this country to be decidedly inferior; the other contends that she possesses one of the most powerful air forces in the world. This variance probably arises from a confusion between quality and quantity. The U.S. army possesses more than 1,100 first class military aeroplanes. Obligations have been made or plans have been laid looking toward the provision by June 30, 1940, of a total of 2,320 modern aeroplanes for the army air corps. Several other air powers of the world now exceed the United States in numbers. In quality, on the other hand, its aeroplanes, engines and accessory equipment are superior. Type for type, no better flying equipment is available anywhere in the world.

The military policy of the United States is defensive and not aggressive. Its air force has been developed, organized and trained pursuant to that established and recognized directive. It must be measured with its probable missions continually in mind.

(O. WE.)

**Navy.**—The primary mission of naval aviation is to further the capabilities of the navy and thus permit it more efficiently to perform its required functions. Organized initially with this aim in mind, the development, carried on during subsequent years, has proved the wisdom of this course. Today American naval aviation has reached the position where it is one of the most highly developed and efficient possessed by any country. It is firmly believed that this position is due to the fact that the development has been carried out entirely by and within the navy. The fact that aviation is an integral part of the navy makes it strictly a naval air force. It is a project of the officers and men of the regular service who serve on naval vessels in the capacity of the regular naval officers. As a result, the development of tactics has made for harmonious and efficient co-operation between air, surface, and sub-surface units to a point where aircraft in fleet operations are as much an indispensable part of the whole as are cruisers, destroyers, or submarines. At the same time, naval aviation has contributed directly to the fleet, through the medium of the landplanes of the carriers and the long-range patrol planes, a mobility over the sea which otherwise would not have been achieved.

All combatant ships of the navy, with the exception of the destroyers and submarines, carry their own complement of aeroplanes, varying in number from three on the battleships to 76 on the aircraft carriers, the type of aeroplane used being determined



by the mission of the surface ship to which it is attached. These requirements have brought into being aeroplanes possessing mechanical features and capabilities that differ greatly from aeroplanes operated by land-based military forces and by commercial aviation establishments. Continuous efforts have been made to keep to a minimum the number of types, by designing each to perform the maximum number of functions, with a view to reducing manufacturing and maintenance costs.

Aircraft operating from aircraft carriers may be considered as (1) offensive; those operating from carriers and battleships as (2) service; and those operating from shore bases as (3) local defence. The offensive aircraft (1) includes fighters, torpedo and bombing, dive bombers, and carrier scouts. The service type (2) includes cruiser scouts and battleship observation planes. The local defence planes (3) include the patrol and patrol bomber flying boats. Miscellaneous craft which are not designed strictly for military functions includes the training, ambulance, utility and transport planes.

The following is a brief description of these basic types:

(a) The fighting plane, representing the maximum in performance, manoeuvrability, and gunnery, is small and high-powered, with the primary mission of attacking enemy aircraft with gunfire.

(b) The torpedo and bombing planes, the largest type employed in the carriers, are designed to attack enemy heavy vessels or shore bases. An important type under this classification is the dive bomber, which, as its name suggests, delivers its bomb attack in a vertical or near-vertical dive on enemy units, either ashore or afloat.

(c) The scouting and observation planes require speed, range, good gunnery defence, and excellent facilities for radio, in order to accomplish their missions of scouting for the cruisers and carriers and observing for the battleships.

(d) The patrol plane is the largest type in service in the navy, its size being necessitated by the fact that the craft must be capable of great range, be thoroughly seaworthy, and sufficiently habitable to permit operating for protracted periods independent of its base. In addition, the patrol plane must be self-protecting while carrying out long-range strategic scouting flights, and must be capable of joining the fleet at any time.

On January 1, 1938, the American navy had on hand approximately 1,000 first-line planes and approximately 800 additional on order. When the present program, planned to meet the requirements of the Vinson-Trammell Bill, is completed, the navy will have approximately 2,000 aeroplanes on hand. The completion of this program is scheduled for the year 1941.

Naval aviation today constitutes a striking force that has gone far toward increasing the value of the naval forces. The persistent increase in the capabilities of aircraft and aircraft equipment permits the logical assumption that naval aviation will undertake an additional percentage of the work and responsibility of the fleet, thus increasing the mobility and enlarging the sphere of power and efficiency of the United States' first line of defence. (See also *ARMIES OF THE WORLD: Aeroplanes and Tanks*; *WORLD ARMAMENTS*.) (A. B. Co.)

**The World.**—Air strength is normally reckoned in terms of first line aircraft—which represents the number of machines actually in service with formed units. Subject to certain qualifications, it gives a reasonable idea of the number of aircraft which could be engaged on the outbreak of war, and thereby enables some calculation of the scale of air attack that a country might launch. For each first-line machine, most countries aim to maintain three or four in reserve, to make up the wastage that is likely to occur during the first few months of a struggle, before the factories can attain their expanded war rate of production.

In these matters the difficulty of penetrating the veil of secrecy,

combined with the apprehension of being bombed, gives rise to a natural exaggeration. In the case of the German air force, for example, its creation and expansion have been carried out with such secrecy as to encourage extreme estimates. Thus in 1934 the public abroad was startled by the declaration of a great newspaper magnate that Germany had 25,000 military aircraft. In 1935 he gave fresh figures—to the effect that Germany possessed 10,000 bombers each capable of carrying about a ton of explosives. If the estimate had not mounted as one might have expected, considering that there had been a year's interval for expansion, the picture was certainly painted on a large canvas. The Russians have a reputation for generous-size estimates of German military preparations: at the same period the Assistant Commissar for war credited the Germans with a total of 3,700 military aircraft, including reserves. Even this figure was considerably in excess of what French experts calculated—and the French, since 1914, are not inclined to minimize any menace that Germany possesses.

Actually, there is reason to doubt whether, at the end of 1935, the first-line strength of the German air force much exceeded a total of 600 machines. Expansion, however, has been moving rapidly to overcome the disadvantages of a late start. It is probable that by the spring of 1937 the German air force attained what is believed to have been its original goal—a first-line strength of 1,500 machines. That it did not reach this earlier was due to the difficulty of training personnel and organizing units as fast as the manufacture of machines, which has been proceeding at a rate that was probably in excess of the capacity to absorb them. The accident rate in training is reported to have been extremely high, although the details have been hidden. Another significant feature of the German air force is the high proportion of bombers of various types. Fully half the force appears to be composed of bomber squadrons of various kinds, and more than half of these are equipped with large machines that can carry a bomb-load of upwards of a ton, with a radius (out and back distance) of about 400 miles—far enough to reach the capitals of any of Germany's neighbours. But while the aeronautical properties of the German machines are good, those which have been seen in the Spanish war have compared unfavourably in speed and armament with the bombers of Russian, Italian, and American manufacture. The German fighting machines have been more impressive, although even with these their effectiveness and value have fallen off badly at heights over 12,000ft. Newer types of heavy bombers are coming into service, with a speed of over 200m.p.h. At the same time it is believed that a further expansion of the first-line strength is in progress, and by the spring of 1938 a total of 2,200 machines may be reached. The ultimate goal may be a first-line strength of 3,000 machines, with reserves of at least equal size.

In the past Germany specialized in the construction of civil aircraft that were easily and quickly convertible into military machines, and probably a further 200 could have been reckoned on this account. This asset, however, is now losing much of its old significance with the achievement of the air force expansion. So long as Germany was trying to hide the fact that she was developing a military air force, it was convenient to have a reserve of pseudo-civil machines that could be converted into bombers in emergency. Now the need for this device has passed. Nevertheless the pilots and personnel carry out several months' regular training each year, and there is little doubt that in war they would be immediately formed into regular squadrons, equipped with military aircraft which are held ready for them in peace time. The civil aircraft themselves would more probably be used for training purposes.

There are auxiliary and sports associations, in which well over 5,000 pilots are said to be in training; from these might emerge enough squadrons to form an additional force of 300–400 ma-





GERMAN FIGHTING AND BOMBING PLANE, fast, heavily-armed and designed to outfight the pursuit type of airship



BRITISH ARMY BIPLANE with 800 horse power engine



U.S. NAVY TORPEDO BOMBER



TEN-TON BRITISH BOMBER with three guns has speed of 192 miles an hour and a flying range of 1,500 miles



SINGLE-SEAT FIGHTING PLANE of the U.S. Navy



EXPERIMENTAL, PATROL BOMBER of the U.S. Navy



UTILITY TRANSPORT PLANE of the U.S. Navy



FRENCH BOMBING PLANE flying over Paris



chines, besides providing reserve pilots for the regular air force.

Italy is another country where the veil of secrecy has been tightly drawn. Since the expansion which followed the coming of the Abyssinian war, her actual first-line strength is probably about 1,500 machines, and may reach a total of 1,800 by next spring. About a third of them are said to be bombers, while a considerable proportion of the fighters are designed for attack on ground targets. Out of the present number, nearly 200 are said to be still in Eritrea and Somaliland, engaged in clearing up the Abyssinian situation, and about the same number is in Libya and the Dodecanese. Her intervention in Spain has also entailed a considerable diversion of strength. But Italy can probably exercise the strategic mobility of her air force better than any other country with overseas possessions. For she can concentrate at home in peace, for training, and yet reinforce Libya and the Dodecanese at short notice whenever required. This strategic mobility is growing with the extending range of aircraft—and Abyssinia as well will soon be reinforcing by air as easily as Libya is today. Italy has now a large output of new types of bombers of high performance, with a speed of about 220 m.p.h. and a radius of nearly 500 miles. These have been turned out by the factories as fast as possible. With such a radius it would be possible, from Libya, to reach, not only Alexandria but Port Said, and also the ports in southern Greece. Only the extreme ends of the Mediterranean would be beyond their reach. On the other hand, her strategic situation as a whole has weaknesses so marked that, on a sound calculation, they should be a check on rash impulses. Apart from the fact that so large a part of her land forces and resources are engulfed in East Africa, precariously dependent on a tenuous lifeline from the homeland, Italy's own situation has handicaps that are inherent in geography: her long coastline, the narrowness of the country, and the nearness of her main centres to the sea or to neighbouring frontiers, are factors that cannot be ignored. The factories which produce her new long-range instruments of warfare are themselves within uncomfortably short range of the less obvious points from which the forces of other countries might take off. Compared with France, for example, the strategic situation of Italy is on balance unfavourable for any contest in the air. Her vital centres are far more accessible than are those of France to the Italian air bases.

France, which for long had the largest air force in the world, has dropped behind. Her difficulty, indeed, has been to maintain the numbers she had while re-equipping them with new types and providing adequate war reserves. It is probable that her first-line strength early in 1937 was not much more than 1,400 machines, and of these barely 1,000 were available at home, half of them bombers, the rest being overseas, in North Africa, the Levant, Indo-China, etc. Moreover, most of the French machines are not of a very modern type, although new types of greatly improved performance began to come into service gradually from the early months of 1937. The number, too, is being increased 50 per cent. An existing factor which has to be taken into account is that France's proportion of bombers is much less than Germany's. But the new French machines will be of much larger bomb-capacity than at present.

The strength of the British air force, before an expansion program was somewhat hurriedly embarked on in face of the ominous European situation, amounted to only 880 first-line machines. The process of expansion, moreover, has been complicated by Italy's invasion of Abyssinia and the consequent tension in the Mediterranean: the diversion of instructors to emergency duty naturally interfered with the training of new personnel. At the end of 1936 the total regular strength was just over 1,100. But the needs of India and the other overseas territories, as well as of the navy, reduced the total regular strength at home to a little under 900

first-line machines. Under the present program of expansion, it was intended to reach a total of 1,500 by the spring of 1937, and 1,750 by the autumn, but the completion of the program has suffered from delays. The Fleet air arm has at present a first-line strength of some 220 machines, but five new aircraft-carriers of great size are now being built, and when these are added to the existing five, the total strength carried at sea will be little short of 700 machines. The new machines with which the British air force is being equipped include what are stated to be the fastest single-seat fighter and the fastest medium bomber in the world, the latter having a speed of 280 m.p.h. and the former considerably over 300 m.p.h. The latest heavy bombers have a maximum speed of 220 m.p.h., while their range is nearly 2,000 miles.

The Russian air force is now the greatest in Europe. Its first-line strength is reported to be over 3,500 machines, and may be as high as 4,000. While nearly three-quarters of the total are believed to consist of fighters and general purpose machines, it includes at least 400 large bombers of long radius—of which, because of her geographical distances, she has made a special point. The strength of the Russian air force, together with its striking range, forms the ground on which Hitler is claiming to go beyond the level of parity with the air forces of his Western neighbours. Another feature which Russia, like Italy, has developed, is the employment of swarms of machines designed for the attack upon ground targets, in conjunction with the army. As seen in the Spanish Civil War, the performance of the Russian machines, both bombers and fighters, has exceeded expectations as much as that of the German has fallen short. Further, she has made better progress than many people imagined possible in training the mechanics and creating the ground organization on which the effective operation of an air force depends.

In 1936 the first-line strength of the Japanese air forces was reputed to consist of about 860 machines, and of these more than half were allotted to the navy. They were not of very modern types, and a significant feature was the small proportion of bombing machines. Since then there has been considerable development, especially in providing more bombing machines, which are now believed to constitute more than a third of the total, while their range has been increased to over 1,000 miles. The first-line strength may be approaching 1,400 machines, of which the naval air arm probably accounts for nearly 800, while that of the army is likely to see a further expansion.

The air forces of the world show marked differences in organization, which affect their development and methods of employment. There are two main types—those which have a separate administration and an independent command, and those which form an integral part of the army and navy. The British has been the most long-standing example of the first type, the Italian following its example in 1923 after Mussolini had come into power. France has more recently, and by degrees, conformed to the British model in the organization of her air forces, which are administered by the Air Ministry, and in general are under the operational control of the General Staff of the Air Forces. But in France, as in Britain, aircraft, carried on board ship “form an integral part of the naval forces,” while “naval co-operation aircraft not carried on board ship are at the disposal of the Minister of Marine.” In Germany there is an Air Ministry which is a part of the Reichswehr Ministry; and the Military air force, in common with the remainder of the armed forces, is under the command of the Reich Minister of War as Commander-in-Chief. The U.S.S.R., on the other hand, has her air force as a part of her army; and Japan, like the U.S.A., has her Military Aviation under the War Office and her Naval air force as a part of her navy. The lesser Powers have, generally speaking, not created a separate Air Ministry or an independent Air Command. Thus it may be said that the Great Powers are



fairly equally divided in the type of control which they have adopted, while the smaller Powers, with an occasional exception, such as Sweden, have incorporated their air forces in the previously existing services. (See also *ARMIES OF THE WORLD: Aero-planes and Tanks*; *WARFARE*; *MUNITIONS OF WAR: Aircraft*.)

(B. H. L. H.)

**Air Mail:** see *POST OFFICE*.

**Airports.** While airport construction began during the World War, it was not given serious attention until a few years later, when civilian flying was found to be greatly hampered by inadequate landing facilities. Because of the great cost of landing fields, their creation soon became a Government function and airport construction was thus undertaken in various parts of the world. In present usage "airport" is applied only to a flying field which has been graded, drained and provided with the necessary buildings and facilities for housing and handling aircraft. "Flying field" is now applied to the portion of an airport which is used for taking off and landing and to unimproved areas which are used for flying operations. "Emergency field" is used to designate an area (generally small and having no buildings of consequence) which is maintained for emergencies. Where regular service is operated it has become common practice to provide emergency fields along the route—which thus becomes an "airway." This began soon after the first regular services and has reached its highest development in the United States, where the Department of Commerce has under its direction over 22,000 miles of airways equipped with lights or radio beacons or both. This great system links together 1,193 municipal and commercial airports and includes 289 Government-controlled emergency fields, of which total 643 are equipped for night flying. Airway marking began with light beacons but foggy weather caused visibility troubles and inspired the development of radio beacons, which now form the main reliance of most airways. The American Municipal Association reported, in 1937, that 738 cities in the U.S. had constructed airports at a total cost of more than \$300,000,000.

In this work the U.S. Works Progress Administration rendered valuable aid, and by November 1937 its expenditures for airports and airways had exceeded \$70,000,000.

Current practice aims to provide airports which can be used regardless of wind direction but accepts as tolerable those providing four landing and take-off directions if these are distributed well around the points of the compass. Anything less is considered insufficient and provision for at least eight-way take-off and landing is expected in a first class airport. Grass sod was originally used for the flying field areas but the growth of traffic is steadily forcing the substitution of hard surfacing for the portions most used. These areas are called "runways" and the paving of runways with macadam, asphalt, concrete, or similar materials, has produced the distinctive pattern of crossed strips which now marks an airport as seen from the air. Airports and their runways vary greatly in size, being governed by many conditions such as the surroundings and altitude as well as by the volume and kind of traffic. So far as one may generalize, a first class airport should have an area of 300 to 400 acres or more; it should have runways at least 3,500 feet long and one of them should be as close as possible to 5,000 feet in length. With the coming of larger and more heavily loaded aeroplanes the tendency is toward further increase in area and several airports already have runways well over 4,000 feet long.

**Plan.**—The arrangement most generally accepted for airports is that of grouping all buildings at one side of the plot in order that the other sides be free of obstructions. However, the plots

vary so much in shape that each airport takes on its own individual characteristics and it becomes impracticable to call any one "typical." It is equally difficult to point to specific airports as "best" or "biggest," because of the constant improvement and the divergent conditions. Taking area as one criterion, the Municipal Airport of Cleveland, Ohio, ranks as largest with its total of 1,040 acres. The most centrally located airport (with respect to a large city) is undoubtedly Tempelhof, Berlin's main airport, which is well within the city and on a subway line. The Municipal Airport of Newark, N. J., handles the greatest volume of traffic, averaging a total of 265 landings and take-offs daily, 130 of these being movements of big airliners. The Municipal Airport of Chicago, Ill., ranks second and follows closely upon Newark in traffic volume. Increasing volume of traffic forced the development of airport traffic control systems, of which the Newark installation is probably the outstanding example. Experiments in traffic control began almost twenty years ago (using signal lights), but only within the past few years has there been any need of a practical system. Even yet, this need exists only at the busiest airports. The radio telephone is now used, although signal lights are also provided for directing aeroplanes which have no radio equipment. A glass-enclosed tower is usually provided, on top of one of the buildings, to give the traffic controller a full view of the airport and its surroundings. Here are located landing light switches, signal lights, telephones and radio for communication with pilots of approaching aircraft or those on the surface and about to take off.

Using methods like those of a train dispatcher, the traffic controller directs the movements of all aircraft in the vicinity—whether in the air or on the ground.

**Safety.**—As airway traffic increased, it brought a pressing need for some method of control to avoid collisions, particularly during conditions of poor visibility. The method now in use depends upon radio communication with the pilots; airliners operating over important routes maintain regular communication with control stations along their routes. Through radio telephony the pilots are informed of weather changes, the proximity of other aircraft and similar information. Flying along an airway each aeroplane is expected to maintain a pre-arranged altitude and to fly somewhat to the right of the centre of the airway as indicated by the signals emanating from its radio beacons. These beacons emit two signals which merge into a steady hum when the aeroplane is on the course, because it thus receives both signals with equal intensity.

Divergence to either side causes that signal to come in stronger than the other, thus informing the pilot when he is off his course as well as indicating the side to which he has drifted. Radio transmission has also been used for effecting "blind" landings of aeroplanes in Europe and the United States. This method depends upon the reception of special local signals which are picked up when approaching the airport. These signals keep the pilot informed of his position and altitude with respect to the runway on which he is to land and make it possible to effect a landing with reasonable safety even in a fog.

Among some of the recent developments of importance there might be noted the construction just completed at Le Bourget, near Paris, and that which is going on at Tempelhof. Gatwick, a new airport constructed to serve London, is also of interest because it can be reached in less time than Croydon despite the fact of its being much farther out. Perhaps the most daring of recent airport developments is the chain of facilities dotting the Pacific ocean to provide bases for one of the routes of the Pan American Airways System. This company utilizes airport facilities at 167 "ports of call"; including other airports and special emergency facilities it has more than 300 bases in all. The Pacific chain in-



cludes many unusual airports, one being the Wake island base which had to be constructed on a tiny and formerly uninhabited island over 1,000 miles from the nearest other land in the Pacific. Despite the difficulties surrounding such construction, less than six months elapsed between inception and actual completion of the entire Pacific chain.

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(A. Bl.)

**Air Races.** Italian fliers won the Istres-Damascus-Paris air race, reaching Le Bourget airport in first, second and third places, thereby winning a total of \$110,000 in cash. The winning plane was flown by Lieut.-Com. Samuele Cupini and Captain Amedeo Paradisi. They covered the 3,800-mile route in 17 hours, 32 minutes, 45.2 seconds, an average of 219m.p.h. Frank W. Fuller of San Francisco, Calif., captured the Bendix transcontinental air race, most famous American air derby. Streaking through the air at 265 miles an hour, Fuller flew from Burbank, Calif., to Cleveland, O., in a twin wasp 1,200-horsepower-motored Seversky.

Rudy A. Kling of Lemont, Ill., won the Thompson Trophy, chief event of the National Air Races, held at Cleveland, Ohio. He averaged a speed of 256.9 miles an hour in his Folkert Speed King during the 20-mile grind. Kling was killed in an air crash at Miami, Fla., on Dec. 3.

The projected New York to Paris air race to commemorate the tenth anniversary of the transoceanic flight of Colonel Charles A. Lindbergh was banned by the United States Bureau of Air Commerce as unnecessarily hazardous.

(T. J. D.)

**Airships:** see AVIATION, CIVIL: *Airships*.

**A. L. A.:** see AMERICAN LIBRARY ASSOCIATION.



RUDY KLING, garage mechanic, and wife, with famous Greve, Thompson and Henderson trophies Kling won in U.S. aviation's greatest annual speed contest September 2-6, 1937, at Cleveland, Ohio

**Alabama,** one of the "deep South" States of the United States, popularly known as the "Cotton State"; area, 52,250 sq.mi.; population (U.S. census, 1930) 2,646,248; estimated July 1, 1937, at 2,895,000. Capital, Montgomery, 66,079. Cities with larger population are Birmingham, 259,678, estimated Jan. 1, 1938, 300,000, and Mobile, 68,202. Of the State's population 744,278 were urban (1930), or 28.1%; 1,700,775 whites; 944,834 coloured; 2,630,370 native born; 15,878 foreign born.



BIBB GRAVES, governor of Alabama 1927-31, again elected for 1935-39 term

**History.**—The most striking fact in the State's economic history in recent years has been the rise of manufacturing and transportation development. In politics the

Democratic Party has dominated. The Republican Party has persisted, but has exerted little influence in State politics. Alabama has had five constitutions, those of 1819, 1865, 1868, 1875, and 1901. The constitution of 1901 contained notable innovations: the term of executive and legislative officials was extended from two to four years and executive officers cannot succeed themselves.

Many amendments have been adopted since, most important of which are those providing for a local school tax, a State budget, income tax, and the issuance of bonds for State highway construction. The most notable laws pertain to education, regulation of public utilities, taxation, conservation, labour, convicts, social welfare, elections, public health, and the liquor traffic. In 1937 the Prohibition system, in vogue since 1915, was abolished and the system of local option by counties was adopted. Twenty-four of the 67 counties now permit the sale of hard liquors. The traffic is under the control of the State board.

Chief officers of the State are: governor, Bibb Graves; lieutenant-governor, Thomas Knight (deceased); attorney-general, A. A. Carmichael; State auditor, C. E. McCall; secretary of State, Howell Turner; State treasurer, John Brandown; superintendent of education, A. H. Collins; and commissioner of agricultural industries, R. J. Goode.

**Education.**—A well defined system of elementary and high schools and colleges for both races is maintained. Elementary education is free between the ages of 6 and 21, and compulsory between the ages of 8 and 16. State appropriations in 1937 amounted to \$12,070,660. Total revenues from all sources were approximately \$18,762,920, which was \$4,495,000 less than in 1927-30. Illiteracy among whites above 10 years of age was 4.8% in 1930, coloured 14.9%. There are seven State-supported institutions of higher education for whites and three for negroes. Several colleges are maintained by the Methodists, Baptists, and Catholics.

**Charities and Correction.**—The State supports many philanthropic and penal institutions: institutions for the deaf and blind of both races; hospitals for the insane of both races; a school for feeble-minded children; training schools for wayward white boys and girls; and a reformatory school for negro boys; a child welfare department; juvenile courts; a model State prison and a penitentiary system in which the State provides employment for its convicts. Local Governments, churches, clubs, fraternal orders, and industries maintain charities and child welfare agencies.



**Banking and Finance.**—In 1936 there were 69 national banks with a capital of \$20,625,000, deposits of \$179,786,000 and total resources of \$294,577,000; 148 State banks with a capital of \$8,535,000, deposits of \$63,174,000, and total resources of \$82,221,000. Revenue sources include a property tax, income tax, sales tax, privilege taxes, and levies on gasoline, tobacco, beer, and liquor. Receipts and expenditures for the fiscal year ending Sept. 30, 1937, exceeded \$50,000,000, while the State debt stood at \$71,020,000.



ALABAMA: Composition of population

**Agriculture, Manufactures and Mineral Production.**—Alabama ranked second among the cotton-planting States in 1860. Today many crops are produced in large quantities, but cotton is still the most important one. The State ranked fourth among the cotton States in 1937 with an estimated output of 1,610,000 bales. In 1935 there were 273,455 farms covering 19,660,828 ac. with lands and buildings valued at \$368,219,654.

In 1929 there were 2,848 establishments hiring 119,559 workers and producing goods valued at \$560,378,132. In 1937 there were 1,781 establishments, but industrial payrolls and employment almost reached 1929 levels. Twenty-five industries were established with an invested capital of about \$50,000,000. The two great basic industries are cotton textiles and iron and steel. Other important industries are lumber, blast-furnace products, cast-iron pipes and fittings, cotton-seed oil and meal, coke-oven products, cement, and electric power. The manufacture of electricity is one of the State's most important industries. The capacity of the generating plants of the Alabama Power Company is about 900,000 h.p., and the T.V.A. plants in the State are capable of producing almost as much. The mineral output of the State was valued at \$31,772,042 in 1935. Coal and iron ore are the leading mineral products. (A. B. Mo.)

**Alaska.** The year 1937 marked definite progress in the development of Alaska. A resolution introduced by Delegate Anthony J. Dimond of Alaska and adopted by the first session of the Seventy-Fifth Congress provided for the study of Alaska's resources and recommendations for a long range program of development. This study was entrusted to the National Resources committee, assisted by experts in every field of Federal activity in Alaska. It was completed at the close of the year for presentation to Congress.

A new and important step in the development of Alaska for tourists and the capitalizing of its uniquely beautiful scenery was taken in the construction by the Government of a hotel in Mt. McKinley National Park, second largest and northernmost of American national parks. The erection of this hotel at a cost of \$350,000, to be completed in the summer of 1938, marks only the beginning of a park development program. Some 85 miles of road in the park have been completed and three more roads are under construction. Ten airports are under construction, bringing the total number of landing fields to 98. The number of tourists visiting Alaska rose from a total of 63,208 in the previous year to 72,734. The government-owned Alaska railroad, extending from Seward to Fairbanks and the avenue of transportation for passengers to the park, for the second time in its history showed an excess of revenues over operating expenses. It received an allotment of funds for the replacement of the wooden bridge over the Knik river with a steel bridge, the beginning of a program to replace wooden structures with steel and concrete structures.

Alaska's chief products are fish, metals and furs. The year 1936 had shown the largest production in fish, with a total of 524,042,666 pounds with a value of \$50,455,272. This value was exceeded slightly in the years 1928 and 1929, but otherwise was the highest on record. The number employed in this industry also reached the figure of 30,383 in 1936, the highest on record with the exception of the war year 1918 when it reached the all-time high of 31,213, and 1928 when it reached 31,086. The salmon pack was the largest in history, with a total of 8,437,603 cases (48 one-pound cans to the case).

Alaska mined \$23,694,000 worth of minerals in 1936 as compared with \$18,312,000 the previous year. Lode gold rose from \$6,237,000 in 1935 to \$7,105,000 in 1936 and placer gold from \$9,728,000 to \$11,328,000. Receipts from sealskins were \$251,112. Under a wise conservation policy, the sealskin herd has grown steadily from 132,279 in 1910 to 1,839,119 in 1937. The value of other furs shipped from the territory, consisting chiefly of mink, beaver, blue fox, white fox, silver fox, red fox, marten, ermine, etc., increased \$516,856 in 1936 to a total value of \$1,932,894.

Public works projects completed in 1937 included the dredging and deepening of Sitka harbour, to provide a channel 22ft. deep and 159ft. wide; the deepening of Petersburg harbour and the dredging of a fishing boat basin; five schools and three municipal buildings, five municipal improvement projects, including sewer and water systems.

The legislature in its extra session early in 1937 created a department of public welfare to take advantage of the provisions of the Federal Social Security Act. Under it, approximately 580 persons are receiving old-age assistance. (E. GRU.)

**Albania.** A kingdom on the west coast of the Balkan peninsula, lying between Greece and Yugoslavia. Capital, Tirana. Albania is governed by a king, Zog I, created 1928, with a cabinet and single house of parliament. Flag, black double-headed eagle on red ground.

**Area and Population.**—Area, approximately 11,000 square miles. Population (1930 census), 1,003,100; 71% Moslem, 19% Albanian Orthodox, 10% Roman Catholic. Language, Albanian of Indo-European origin; two principal dialects, Geg, northern, and Tosk, southern. Public education is administered by the State; elementary education compulsory from age of seven for five years where schools exist. Number of schools: elementary and kindergarten, 615; secondary, 18, including 5 for girls, 1 co-educational, and 5 professional.

**History.**—The cabinet of M. Kotta, formed Nov. 1936, continued in office; parliamentary elections were held in January. At the request of the Moslem community, the veil for women was made illegal, also the fez with European dress. On Nov. 28 was celebrated the 25th anniversary of independence. Count Ciano of Italy visited Tirana in April to give assurances that the Italo-Yugoslav accord of March was not directed against Albania's independence. An agreement was made with Greece for the exchange of outlaws. The independence of the Albanian Orthodox Church was finally recognized by the patriarchate of Istanbul.

**Trade and Finance.**—The main industries are agriculture and pastoral. In 1937 the State Agrarian Bank was opened, agricultural agents appointed for the instruction of farmers, and corps of forest guards and veterinary police formed. Total exports (1936) were £482,767 and imports £1,089,460, principal exports being cheese, hides, crude oil, wool, eggs, and livestock; and imports textiles, cereals, gasoline and kerosene, machinery, and sugar.

The currency is the gold franc; current rate 15.40=£1. Currency notes and coinage are issued by the National Bank of Albania. Budget figures, 1937-38, were: income £1,706,155, ex-



penditure £1,705,506. Principal direct taxes are on property, income, profits, cattle, and tithe on crops; indirect taxes are on imports, alcohol, and tobacco.

**Defence Forces.**—Compulsory military service of 18 months is in force, with pre-military training from age of 15. The strength of the army is approximately 13,000. There is no navy or air force. Internal order is secured by a gendarmerie of 3,600.

**BIBLIOGRAPHY.**—Ronald Matthews, *Sons of the Eagle* (1937); J. Swire, *King Zog's Albania* (1937). (D. R. O. H.)

**Alberta**, the most westerly of the three prairie provinces of Canada, was created a province by Act of the Dominion Parliament, Sept. 1, 1905. The province has a total area of 255,285 sq.mi. and a population of 772,000 (estimate, Dominion Bureau of Statistics, 1936). The seat of government is Edmonton. The present Social Credit Government has been in office since Sept. 3, 1935.

Preliminary estimate by the Dominion Department of Agriculture places the gross farm value of field crops for 1937 at \$129,632,000, as against \$104,523,000 in 1936. Other branches of production maintained a consistent level. The oil fields of the Turner valley produced 852,829bbl. of naphtha and 1,864,472bbl. of crude oil as compared with 1,048,671bbl. of naphtha and 238,567bbl. of crude oil in 1936. A reduction of the railway rate on crude oil in August 1926 from 75.6¢ to 52.2¢ per barrel between Calgary and Regina, Saskatchewan, aided the industry.

The budget, presented in March, showed a deficit of \$1,125,000 and a total debt of \$159,000,000. Alberta bonds in default amount to \$6,100,000. Political events during the year were significant. On Feb. 19 the Alberta Supreme Court ruled unconstitutional the Reduction and Settlement of Debts Act, a measure passed by the legislature in 1936 to reduce the principal and interest on private debts. Substitute legislation was then introduced which was also declared unconstitutional by the Alberta Court of Appeal on April 4.

On April 7 the Government officially announced the abandonment of the scrip money experiment begun the previous year.

At the first special session of the legislature in August a bill was passed to regulate and license banking. This was disallowed by the Dominion Government on the grounds that the Act infringed on Federal rights. A second special session was called on Sept. 24. Three acts passed dealing with banking, debts, and the press were reserved for assent and reference to the Federal Government by J. C. Bowen, lieutenant-governor; Mr. Aberhart, (*q.v.*) premier of the province, challenged the power of the Federal Government to disallow any provincial act. The question has been placed before the Supreme Court of Canada. (*See also* SOCIAL CREDIT.) (J. T. C.)

**Alcoholic Intoxication:** *see* INTOXICATION, ALCOHOLIC.

**Aldrich, Richard** (1863–1937), American music critic, who wrote for *The New York Times* for twenty-two years and prepared many scholarly volumes on musical subjects. He died in Rome, June 2, 1937. A short sketch of his life appears in the *Encyclopaedia Britannica*, Vol. 1, p. 552.

**Alexandretta, Sanjak of.** One of the first results of the Franco-Syrian treaty of 1936 was to revive Turkey's claims to the Sanjak of Alexandretta. This strange district contains a large Turkish minority, the population of 220,000, consisting of 85,000 (or 39%) Turks, 62,000 Alouites, 22,500 Sunnite Arabs, 49,000 Christians, including 25,000 Armenians, 5,000 Kurds, 1,000 Circassians, 500 Jews, and 900 mixed. The Ankara Government objected on principle

to men of Turkish race being placed in subjection to Arab authority, and insisted upon the independence of the Sanjak, reserving to themselves the right to annex the territory to the national state later on. France could not contemplate lending her assistance to Pan-Arab ambitions by forcibly opposing Ankara's claim, but aimed at conciliation and pacification, and through her the dispute was brought before the Council of the League of Nations. The Council first demanded an inquiry, and sent three neutral observers into the Sanjak. After an examination of their report and several exchanges of views, the Council achieved the conclusion of a Franco-Turkish agreement (May 29, 1937). It consists of: (1) A treaty guaranteeing the territorial integrity of the Sanjak. (2) Agreement guaranteeing the frontier between Turkey and Syria.

In June 1937, the Council of the League of Nations promulgated a statute which stipulates that the Sanjak should henceforth enjoy full independence in the conduct of its internal affairs. The Council of the League of Nations attributes to itself a power of control exercised through a permanent delegate of French nationality. (R. PIN.)

**Alfalfa.** Recent winter killing and cumulative effects of previous droughts contributed to a smaller acreage of alfalfa in the United States in 1937, but higher yields per acre produced a larger crop, 27,056,000 tons of hay, as compared to 24,881,000 tons in 1936 and a five-year (1928–32) average of 23,544,000 tons, the U.S. Department of Agriculture estimated. In Canada the 1937 crop was 1,966,000 tons, compared to 2,298,000 tons in 1936, the Ministry of Trade and Commerce estimated. Production was divided among the provinces as follows, figures in parentheses being for 1936: Ontario, 1,519,000 tons (1,824,000). Alberta, 166,000 tons (183,000). British Columbia, 163,000 tons (158,000). Manitoba, 56,000 tons (68,000). Quebec, 36,000 tons (36,700). Saskatchewan, 26,000 tons (29,000).

Production of alfalfa seed in the United States shifted to the Western States because of a sharp decline in the North Central States, which produced only 369,700bu. of seed in 1937, compared to 525,700bu. in 1936. Production for the entire country was 943,000bu., slightly higher than the 1936 crop and about 8% larger than the five-year average. Declines in alfalfa acreage in the United States have been followed by increased planting of lespedeza and cowpeas for hay. The lespedeza seed crop of 1937 was the largest ever harvested in the United States, 99,165,000lbs., which was 60,801,000lbs. larger than the small 1936 crop. Alsike and red clover made a crop of only 781,000bu. in the United States in 1937, compared to 1,172,000bu. in 1936. Timothy seed production in 1937 was 2,349,700bu. and only 926,800bu. in 1936; sweet clover, 954,100bu. in 1937 and 770,000bu. in 1936. (S. O. R.)

**Algae:** *see* BOTANY: *Algae*.

**Algeria**, a North African country forming an integral part of France, under a governor-general. It is divided into the departments of Algiers, Oran, and Constantine, and covers an area of about 222,120 sq.mi. between long. 4°36'W. and 6°16'E., and lat. 37°6'N. to about 30° N. Population (1936), 7,234,684 (987,252 Europeans).

**History.**—The Arab nationalist movement was active in 1937 throughout French North Africa, and its agents are working for an Islamic revival and receive particular attention among the *ulemas*, whose leader in Algiers is M. Ben-Badis.

The coming into power of the Front Populaire was the cause of widespread disturbances. This party included among its members the very men who had encouraged the most daring demands of the



natives. The unrest did not spread beyond the towns and was chiefly attributable to small groups of young men. How high feeling ran had been demonstrated on Aug. 2, 1936, with the assassination of the Mufti of Algiers, whom the *ulemas* reproached for his devotion to France. A delegation of *ulemas* visited Paris in October and brought back vague promises from M. Léon Blum. The *ulemas* and the reformers were soon surpassed by the extremists, whom the governor-general, Le Beau, had to suppress firmly.

The Viollette proposal to grant electoral rights to certain categories of natives was discussed passionately; but the native leaders wanted to acquire French electoral rights while retaining their personal status as Moslems, so the project came to nothing. By a decree of Feb. 26, 1937, the anti-French association *l'Étoile Nord-Africaine* was at last dissolved, but revolutionary propaganda showed no signs of abating. Riots occurred in many places (as at the factories at Kouif, on Mar. 9). The 1937 budget amounted to 1,590 million francs. Trade for 1936 was valued at 5,612 million francs, surpassing the figure for 1935 by 155 million francs. Imports, 3,078 million francs; exports, 2,534 millions.

**Allergy.** In studying the causes of allergy it has been found that allergic symptoms are not related to the calcium or potassium level of the blood (Hathaway, Rappaport, Reed, Struck); that sugar tolerance is normal in allergy (Wagner, Rackemann, Duffy); and that a guinea-pig may be sensitized to simple chemical substances (Landsteiner). Habitual hyperthermia or fever may be due to food allergy (Gay). Essential hypertension is aggravated in some cases by food allergy (Vaughan and Sullivan). Thrombocytopenia or lessened platelets in the blood may result from foods and amidopyrine (Squier). Sensitization to mosquito bites may appear with severe symptoms, and apparently successful immunization against the reaction is possible (Benson). The danger from swimming for persons sensitive to cold is a serious problem (Horton, Brown, Roth). Other conditions which may be allergic are oedema and haemorrhage of the retina (Bedell); detachment of the retina (Prewitt, Balyeat); blurring of vision and oedema of the macula (Plumer); and conjunctivitis and recurrent iritis (Woods).

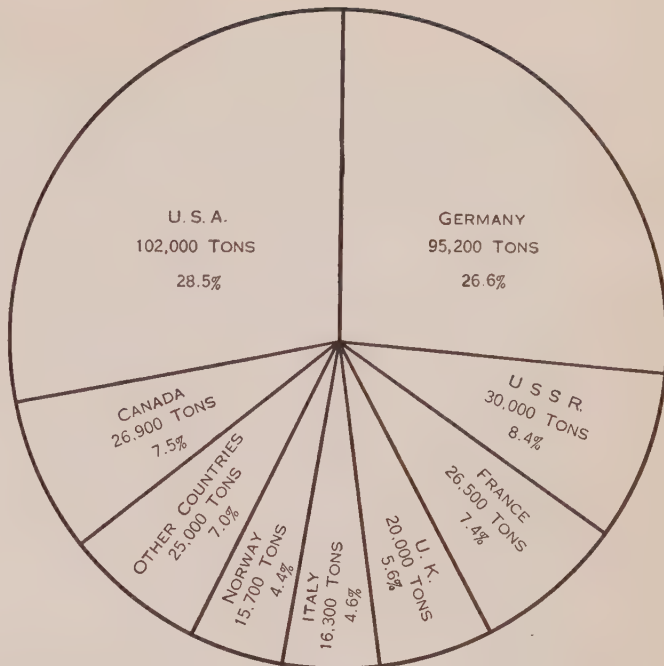
In the diagnosis of allergy, increase in blood eosinophilia and decrease in peripheral white blood-cells following ingestion of offending food is significant (Madison and Squier).

Studies of treatment have shown that treatment by oral pollen administration for hay fever is not successful (Bernstein and Kirsner). In asthma, severe cases may be relieved by ether anaesthesia (Kahn), and by tribromethanol anaesthesia (Fuchs). A few cases were helped by adrenal cortical hormone (Wilmer and Miller). In eczema, certain types were relieved by Vitamin C (White). (B. Z. R.)

**Alloys:** see ARCHITECTURE: *Materials*; CHROMITE; MAGNESIUM; MOLYBDENUM; NICKEL; TITANIUM; VANADIUM.

**Aluminium or Aluminum.** The most important developments of recent years in connection with aluminium all centre around the problem of meeting the larger demand as the metal has been adopted for a rapidly growing list of new uses, resulting in the opening up of new ore deposits (see BAUXITE), the expansion of output by old producers, and the establishment of considerable new production.

Marked changes are seen, not only in the magnitude of the output, but also in its distribution. The normal trend of expansion has been altered by the world war, industrial depressions, and the rearmament activities and nationalistic self-sufficiency pro-



WORLD PRODUCTION OF ALUMINIUM in 1936: total 357,600 metric tons

grams that have been inaugurated in several countries, with a corresponding shift in sources of output and trade flow across international boundaries. There have been marked increases in the outputs of Germany and Italy, and six new countries have been added to the producer's list—Spain in 1929, the Soviet Union in 1932, Japan and Sweden in 1934, Hungary in 1935, and Yugoslavia in 1937; besides this, plans are under way for the construction of plants in Australia and Czechoslovakia, and for increases in plant capacity in Italy, Japan and the United Kingdom.

The lightness of aluminium has always been a determining factor in its adoption for new uses, and much of the recent expansion in demand has been due to extensive application for the specific purpose of lightening the weight of all types of transportation equipment; to reduce the dead load and increase the pay load; examples of this are found in the new stream-lined passenger trains, freight cars, aircraft, truck bodies, mine cages, steam shovel dippers, bridge floors, and even the lowly wheelbarrow, to mention only a few. Technologically, one of the most striking of the recent developments is the commercial application of a new process for the coating of steel with aluminium, giving a product with the strength of steel and the high corrosion resistance characteristic of aluminium. (G. A. Ro.)

**Ambassadors and Envoys.** The following is a list of Ambassadors to and from the United States and to and from Great Britain:

### To and From the United States

(\* = ambassadors; unstarred, envoys.)

To the United States	Country	From the United States
Konitz, Faik . . . . .	Bolivia . . . . .	Grant, Hugh G.
*Espil, Felipe A. . . . .	Argentina . . . . .	*Weddell, Alexander W.
Prochnik, Edgar L. G. . . . .	Austria . . . . .	
*Straten-Ponthoz, Count Robert . . . . .		
Vander . . . . .	Belgium . . . . .	*Gibson, Hugh S.
Guachalla, Dr. Luis F. . . . .	Albania . . . . .	Caldwell, Robert G.
*Aranha, Oswaldo . . . . .	Brazil . . . . .	*Caffery, Jefferson
Naumoff, Dimitri . . . . .	Bulgaria . . . . .	Atherton, Ray
Marler, Sir Herbert . . . . .	Canada . . . . .	Armour, Norman
*Trucco, Manuel . . . . .	Chile . . . . .	
*Wang, Chengting T. . . . .	China . . . . .	*Johnson, Nelson T.
Pumarejo, Miguel L. . . . .	Colombia . . . . .	
Castro Beeche, Ricardo . . . . .	Costa Rica . . . . .	Hornibrook, William H.
*Martínez Fraga, Dr. Pedro . . . . .	Cuba . . . . .	*Wright, J. Butler



<i>To the United States</i>	<i>Country</i>	<i>From the United States</i>	<i>To Great Britain</i>	<i>Country</i>	<i>From Great Britain</i>
Hurban, Vladimír . . . . .	Czechoslovakia	Carr, Wilbur J.	Colban, E. A. . . . .	Norway . . . . .	Dormer, Sir Cecil F. J.
Wadsted, Otto . . . . .	Denmark	Owsley, Alvin M.	Arias, Dr. Arnulfo . . . . .	Panama . . . . .	Adam, F. E. F.
Pastoriza, Andrés . . . . .	Dominican Rep.	Norweb, R. Henry	§Espinoza, Dr. Rogelio . . . . .	Paraguay . . . . .	Ovey, Sir Edward
Alfaro, Capt. Colón E.	Ecuador . . . . .	Gonzalez, Antonio C.	Benavides, A. . . . .	Peru . . . . .	Forbes, V. C. W.
Amine Youssef Bey, Mohamed	Egypt . . . . .	Fish, Bert	*Raczynski, Count E. . . . .	Poland . . . . .	*Kennard, Sir H. W.
Castro, Dr. Hector D.	El Salvador . . . . .	Frazer, Robert	*Monteiro, Dr. Armindo . . . . .	Portugal . . . . .	*Selby, Sir Walford H. M.
	Estonia . . . . .	Sterling, Frederick A.	†Grigoricea, Basil . . . . .	Rumania . . . . .	Hoare, Sir R. H.
Järnefelt, Eero . . . . .	Finland . . . . .	Schoenfeld, H. F. Arthur	( <i>Vacant</i> ) . . . . .	Salvador . . . . .	Birch, J. H. S.
*Bonnet, Georges . . . . .	France . . . . .	*Bullitt, William C.	Jamieson, M. A. . . . .	San Marino . . . . .	—
*Dieckhoff, Hans H. . . . .	Germany . . . . .	*Dodd, William E.	Boult, F. F. ( <i>Government Agent</i> ) . . . . .	Sarawak . . . . .	—
		*Wilson, Hugh R. (1938)	Sheikh Hafiz Wahba . . . . .	Saudi Arabia . . . . .	Bullard, Sir R. W.
*Lindsay, Sir Ronald . . . . .	Great Britain	*Bingham, R. W.	Phra Rajawongsan . . . . .	Siam . . . . .	Crosby, Sir J.
		*Kennedy, Joseph P. (1938)	*Flórez, Pablo de Azcarate y . . . . .	Spain . . . . .	*Chilton, Sir H. G.
Sicilianos, Demetrios . . . . .	Greece . . . . .	MacVeagh, Lincoln	Palmstierna, Baron E. K. . . . .	Sweden . . . . .	Monson, Sir F. St. J. D. J.
Racinos, Dr. Adrian . . . . .	Guatemala . . . . .	Des Portes, Fay A.	Paravicini, C. R. . . . .	Switzerland . . . . .	Warner, Sir G. R.
Lescot, Elie . . . . .	Haiti . . . . .	Mayer, Ferdinand L.	*Bay Ali Fethi Okyar . . . . .	Turkey . . . . .	*Lorraine, Sir P.
Lozano, Julio . . . . .	Honduras . . . . .	Erwin, John D.	Guani, Alberto . . . . .	Uruguay . . . . .	Drake, E. Millington
Pelényi, John . . . . .	Hungary . . . . .	Montgomery, John F.	*Bingham, Robert W. . . . .	United States . . . . .	*Lindsay, Sir Ronald
MacWhite, Michael . . . . .	Ireland . . . . .	Cudahy, John	*Kennedy, Joseph P. (1938)	U.S.S.R. . . . .	*Viscount Chilton
*Suvich, Fulvio de . . . . .	Italy . . . . .	*Phillips, William	*Maisy, I. M. . . . .	Vatican . . . . .	Osborne, F. D'A. G.
*Saito, Hiroshi . . . . .	Japan . . . . .	*Grew, Joseph C.	Lara, Dr. Alejandro . . . . .	Venezuela . . . . .	Gye, E. F.
Bilmanis, Alfred . . . . .	Latvia . . . . .	Sterling, Frederick A.	Kassidolatz, M. D. . . . .	Yugoslavia . . . . .	Campbell, Sir R. H.
Žadeikis, Povilas . . . . .	Lithuania . . . . .	Norem, Owen J. C.			
*Castillo Nájera, Dr. Francisco	Mexico . . . . .	*Daniels, Josephus			
Haersma de With, H. M. van . . . . .	Netherlands . . . . .	Gordon, George A.			
De Bayle, Dr. León . . . . .	Nicaragua . . . . .	Long, Boaz W.			
Munthe de Morgenstjerne, Wilhelm	Norway . . . . .	Harriman, Mrs. J. Borden			
Boyd, Dr. Augusto S. . . . .	Panama . . . . .	Corrigan, Frank P.			
	Paraguay . . . . .	Findley, B. Howard			
*Freyre y Santander, Manuel de	Peru . . . . .	*Steinhardt, Laurence A.			
*Potocki, Count Jerzy . . . . .	Poland . . . . .	*Biddle, Anthony			
		J. Drexel, Jr.			
Bianchi, João A. de . . . . .	Portugal . . . . .	Pell, Herbert C.			
Davila, Charles A. . . . .	Rumania . . . . .	Gunther, Franklin M.			
Abhibal Rajamaitri, Phya . . . . .	Siam . . . . .	Neville, Edwin L.			
*Rios, Dr. Fernando de los	Spain . . . . .	*Bowers, Claude G.			
Boström, W. . . . .	Sweden . . . . .	Dearing, Fred M.			
Peter, Marc . . . . .	Switzerland . . . . .	Harrison, Leland			
*Ertegun, Mehmet M. . . . .	Turkey . . . . .	*MacMurray, John Van A.			
Close, Ralph W. . . . .	Union of South				
	Africa . . . . .	Keena, Leo J.			
*Trojanovsky, Alexander A. . . . .	U.S.S.R. . . . .	*Davies, Joseph E.			
Richling, J. . . . .	Uruguay . . . . .	Dawson, William			
Escalante, Dr. Diógenes . . . . .	Venezuela . . . . .	Nicholson, Meredith			
Fotitch, Constantin . . . . .	Yugoslavia . . . . .	Lane, Arthur B.			

### To and From Great Britain

(\* = Ambassador; unstarred = Envoy-Extraordinary; † = Minister-Plenipotentiary; ‡ = Minister Resident; § = Chargé d'Affaires; || = Consul-General; ¶ = Consul.)

<i>To Great Britain</i>	<i>Country</i>	<i>From Great Britain</i>
Sirdar Ali Muhammad Khan . . . . .	Afghanistan . . . . .	Fraser-Tytler, Lt.-Col. W. K.
Kurti, Lec . . . . .	Albania . . . . .	Ryan, Sir A.
*Malbran, Dr. Manuel . . . . .	Argentina . . . . .	*Ovey, Sir Esmond
Franckenstein, Baron Georg . . . . .	Austria . . . . .	Palaret, C. M.
*de Marchienne, Baron E. de C. . . . .	Belgium . . . . .	*Clive, Sir Robert H.
Sanchez, Placido . . . . .	Bolivia . . . . .	Rawlins, E. C. D.
*de Oliveira, Dr. Régis . . . . .	Brazil . . . . .	*Gurney, Sir Hugh
Radeff, Simeon . . . . .	Bulgaria . . . . .	Peterson, M. D.
*Edwards, Augustin . . . . .	Chile . . . . .	*Bentnick, Sir C. H.
*Quo Tai-chi . . . . .	China . . . . .	*Knatchbull-Hugessen, Sir Hugh M.
		*Kerr, Sir Archibald Clark
§Tamayo, Luis E., M.-P. . . . .	Colombia . . . . .	Paske-Smith, M. B. T.
( <i>Vacant</i> ) . . . . .	Costa Rica . . . . .	Adam, F. E. F.
y Menocal, G. de Blanck . . . . .	Cuba . . . . .	Grant-Watson, H. A.
Masaryk, Jan . . . . .	Czechoslovakia . . . . .	Newton, B. C.
Reventlow, Count Eduard . . . . .	Denmark . . . . .	Ramsay, Sir P. W. M.
Ureña, M. H. . . . .	Dominican Republic . . . . .	†¶Paterson, A. S.
§  Quevedo, Dr. Antonio . . . . .	Ecuador . . . . .	Bullock, G. H.
*Dr. Hafez Afifi Pasha . . . . .	Egypt . . . . .	*Lampson, Sir Miles
Schmidt, August . . . . .	Estonia . . . . .	Orde, C. W.
Gripenberg, Georg . . . . .	Finland . . . . .	Snow, T. M.
*Corbin, Charles . . . . .	France . . . . .	*Phipps, Sir Eric
*von Ribbentrop, Joachim . . . . .	Germany . . . . .	*Henderson, Sir Neville M.
Simopoulos, M. C. . . . .	Greece . . . . .	Waterlow, Sir S. P. P.
§Figueroa, Dr. Francisco A. . . . .	Guatemala . . . . .	Birch, J. H. S.
Idéfly, Léon . . . . .	Haiti . . . . .	†  Mackness, W. R.
Idé Telepnéf, B. Basilio . . . . .	Honduras . . . . .	Birch, J. H. S.
de Masirevich, Constantin . . . . .	Hungary . . . . .	Knox, Sir G. G.
See DENMARK . . . . .	Iceland . . . . .	Bowering, John
†Ali Sohcily . . . . .	Iran . . . . .	Seymour, H. J.
Seyid Rauf Chadirji . . . . .	Iraq . . . . .	*Kerr, Sir Archibald Clark
*Grandi, Count Dino . . . . .	Italy . . . . .	*The Earl of Perth
*Shigeru Yoshida . . . . .	Japan . . . . .	*Craigie, Sir Robert L.
Zarine, Karlis . . . . .	Latvia . . . . .	Orde, C. W.
( <i>Vacant</i> ) . . . . .	Liberia . . . . .	§Yapp, A. E.
Balutis, B. K. . . . .	Lithuania . . . . .	Orde, C. W.
( <i>Vacant</i> ) . . . . .	Luxemburg . . . . .	Clive, Sir Robert H.
Michel, P. Villa . . . . .	Mexico . . . . .	O'Malley, O. St. C.
Le Mesurier, R. . . . .	Monaco . . . . .	—
Krishna Shumshere Jung . . . . .		
Bahadur Rana . . . . .	Nepal . . . . .	Bailey, Lt.-Col. F. M.
Stirum, Count John P. van L. . . . .	Netherlands . . . . .	Montgomery, Sir H.
Herdocia, Dr. C. . . . .	Nicaragua . . . . .	Birch, J. H. S.

## American Academy of Arts

and Letters was organized in 1904 by the National Institute of Arts and Letters, a body which was organized in 1898 by the American Social Science Association. The method of organizing the academy was as follows: Seven men were chosen by secret balloting of Institute members: William Dean Howells, Augustus Saint-Gaudens, Edmund Clarence Stedman, John LaFarge, Samuel Langhorne Clemens, John Hay and Edward MacDowell. These seven chose eight other members and this group of fifteen then elected fifteen more to complete the organization. In 1908 its membership was extended to fifty. In 1915 the academy received from a then anonymous donor the lots upon which its buildings now stand and a substantial sum of money. In 1921 it received from the same donor and his mother the funds with which it erected its Administration building, and in 1928 from the same donor the funds with which it erected the building containing its auditorium and art gallery.

The academy has steadily increased its influence by adhering to high standards in its various educational efforts: in the publication of its Proceedings and volumes of Commemorative Tributes to deceased members, and in the giving of four medals for Good Diction on the Stage, Good Diction over the Radio, Excellence in the Writing of American Fiction and for Distinguished Creative Work in Literature, Art or Music.

Since its organization the academy has had but three presidents and two secretaries. The presidents were William Dean Howells, 1908–1920, William Milligan Sloane, 1920–1928, and Nicholas Murray Butler, elected in 1929; the secretaries, Robert Underwood Johnson whose death occurred Oct. 14, 1937, and the present secretary, William Lyon Phelps. Wilbur L. Cross is (1937) the chancellor and treasurer. The following men were elected to membership at the Nov. 1937, meeting: Charles McLean Andrews, Bernard Berenson, Van Wyck Brooks, Frederick Converse, William A. Delano, Jonas Lie, Herbert Putnam, Albert Spalding, Chauncey B. Tinker, and Charles Warren. (G. D. V.)

## American Academy of Political and

Social Science. During the year 1937, the American Academy of Political and Social Science, which is now nearly fifty years old, continued its regular activities. The academy provides an open forum for the discussion of questions of national and world importance. It carries on its work through its publications and through meetings. On April 16 and 17, 1937, the Forty-First Annual Meeting was held, with the general subject "The United States and World War." Another meeting was held on October 21 on the subject of "American Neutrality in the Far East."



The bi-monthly journal of the academy, known as *The Annals*, devotes each issue to a special topic. The ones appearing in 1937 were entitled "Improved Personnel in Government Service"; "Current Developments in Housing"; "Consumers' Co-operation"; "The United States and World War"; "The Revival of Depressed Industries"; and "The Prospect for Youth." There are also published a monograph series and a series of pamphlets. The most recent of the pamphlets have been "Modernizing Our State Legislatures," by A. E. Buck, and "The Economics of Isolation" by H. R. Burrows and J. K. Horsefield. (E. M. P.)

## American Association for the Advancement of Science.

During the calendar year 1937 the American Association for the Advancement of Science held two meetings, a summer meeting in Denver, Colo., from June 21 to 26, and its annual meeting in Indianapolis, Ind., from Dec. 27, 1937, to Jan. 1, 1938. At the Denver meeting 575 scientific papers were presented, including a general address by Professor Nevil V. Sidgwick, F.R.S., of Oxford, England. At the Indianapolis meeting nearly 1,300 scientific papers were presented before 225 different sessions of the sections of the association and its affiliated societies. Both meetings of the association in 1937 were distinguished by symposia on subjects of broad scientific and national interest. Among these symposia were those on "The Scientific Aspects of the Control of Drifting Soils," "Tuberculosis and Leprosy—Diseases Caused by Acid-Fast Bacilli," "Science and Society—Fundamental Resources as Affected by Science," "The Applications of Surface Chemistry in Biology," and "The Endocrines as Related to Behavior." Symposia are more and more important features of the meetings of the association. At the close of the fiscal year of the association (Sept. 30) its active members numbered 18,303, and the combined membership of its 162 affiliated and associated societies (including duplications) approached a million. (G. D. Br.)

**American Association of University Professors:** see ACADEMIC FREEDOM.

## American Bankers Association.

Dr. Harold Stonier, internationally known for his work in adult education, was elected executive manager of the American Bankers Association. He succeeds Fred N. Shepherd, resigned, who held that office 16 years. Dr. Stonier retains his positions as national educational director for the association and the American Institute of Banking and director of the Graduate School of Banking. Other officers of the association are: president, Orval W. Adams, Salt Lake City, Utah; first vice-president, Philip A. Benson, Brooklyn, N.Y.; second vice-president, Robert M. Hanes, Winston-Salem, N.C.; treasurer, M. H. Malott, Abilene, Kan.; senior deputy manager, Frank W. Simmonds, New York, N.Y.; general counsel, D. J. Needham, Washington, D.C.; secretary, Richard W. Hill, New York, N.Y.; president, national bank division, Russell G. Smith, San Francisco, Calif.; vice-president, H. E. Cook, Bucyrus, Ohio; trust division, president, Robertson Griswold, Baltimore, Md.; vice-president, Samuel C. Waugh, Lincoln, Neb.; State bank division, president, Harry A. Brinkman, Chicago, Ill.; vice-president, H. W. Koeneke, Ponca City, Okla.; savings division, president, Henry S. Sherman, Cleveland, Ohio; vice-president, P. R. Williams, Los Angeles, Calif.; American Institute of Banking section, Frank R. Curda, Chicago, Ill.; vice-president, Milton F. Barlow, Mankato, Minn.; State secretaries section, president, W. Gordon Brown, New York State Bankers Association; first vice-president, C. W. Beer-bower, Virginia Bankers Association; second vice-president, C. C.

Wattam, North Dakota Bankers Association.

## American Bar Association.

The American Bar Association in 1937 began to function under the new Constitution and By-laws adopted at its annual meeting in Boston in Aug. 1936. Its House of Delegates, representative of the American profession, first met at Columbus, Ohio, in Jan. 1937, and again in Kansas City in September, at the time of the annual meeting. Under the new régime, the control in administration in the Association is vested in the House of Delegates, subject only to the rights of the members to hold a referendum on any particular subject.

The outstanding action of the year was taken under the referendum provisions of the Constitution. Following President Roosevelt's announcement on Feb. 5 of his proposal to enlarge the Supreme Court, the board of governors of the Association ordered a referendum to ascertain the views of its members. Subsequently, a second referendum of all of the lawyers in the United States who were not members of the Association was ordered. The vote on the first referendum was six to one against the President's proposal and on the second referendum it was four to one. The Association, through its Special Committee to Oppose the Supreme Court Proposals, laboured to carry out the mandates of the Bar, chiefly by research on behalf of members of the Congress and by conducting meetings at which both sides of the question were debated. (See also SUPREME COURT OF THE UNITED STATES.)

As a result of action taken at the annual meeting at Kansas City, a referendum was taken in November to ascertain the views of its members on the Child Labour problem, with reference to which the position of the Association has frequently been misrepresented in recent years. By a vote of four to one, ratification of the 1924 amendment was opposed, and by a vote of six to one, the Vandenberg amendment, unanimously reported by the Senate Judiciary Committee, was approved, thus definitely answering the unfounded charges against the Association. (See also CHILD LABOUR.)

In addition to the normal work being carried on by 13 sections and 33 committees, special emphasis has been placed, since the Kansas City meeting, on two phases of the activity of the Association: (1) American citizenship, under the leadership of a committee from the Junior Bar Conference, and (2) improvement in the administration of justice through seven Committees of the Section of Judicial Administration: improving pre-trial procedure; methods of selection of juries; improving trial practice; improving the law of evidence; simplification of appellate procedure; control of state administrative agencies; and improving judicial organization and administration. The aim of these committees is to set up definite standards to be reported at the next annual meeting in July 1938. These standards should be as persuasive with the bench and bar of the several States as have been the Standards of Legal Education and the Canons of Professional Ethics of the American Bar Association. (A. T. V.)

## American Bible Society.

The 121st annual meeting of the American Bible Society in 1937 elected John T. Manson of New Haven, Connecticut, president. Gilbert Darlington is treasurer. General secretaries are the Rev. Dr. Eric M. North, in charge of foreign activities, and the Rev. Dr. George W. Brown, in charge of activities in the United States. The Rev. Dr. Francis D. Stifler is editorial and recording secretary. The society now distributes more than 3,500,000 Bibles annually in the United States. In co-operation with the British and Foreign Bible Society and the Scottish Bible Society the Bible has been translated into more than 1,000 languages, and about 30,000,000 Bibles are distributed annually throughout the world. The society's principal office is at Park



avenue and 57th street, New York city, with branch offices in nine cities in the U.S. and representatives in many foreign countries, in co-operation with the British and the Scotch Bible societies. The American Bible Society elects a vice-president from each of the 48 States and among those so chosen are Chief Justice Hughes, John R. Mott, Mrs. Finley J. Shepard, William Lyon Phelps, and General Evangeline Booth.

**American Dental Association:** see DENTISTRY.

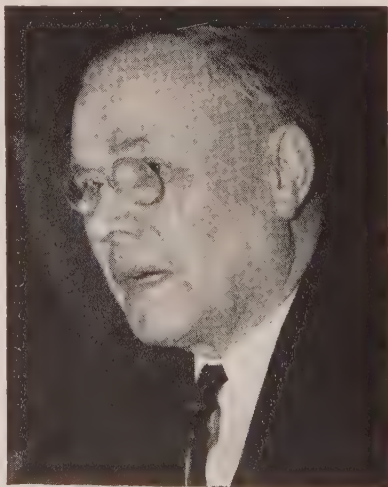
**American Economic Association.** Officers of the American Economic Association for 1938, elected at the 50th annual meeting Dec. 1937, in Atlantic City, N.J., are: president, Alvin H. Hansen, Harvard university; vice-presidents, Frederic B. Garver, University of Minnesota; Frederick C. Mills, Columbia university; secretary-treasurer, James W. Bell, Northwestern university; elected members of the executive committee, Robert M. Haig, Columbia university; Harry G. Brown, University of Missouri; Carter Goodrich, Columbia university; Frank D. Graham, Princeton university; Mabel Newcomer, Vassar college; Benjamin M. Anderson, Jr., Chase National Bank, New York city. Davis R. Dewey, Massachusetts Institute of Technology, Cambridge, Mass., is managing editor of the association's quarterly, the *American Economic Review*, considered by economists as one of the most valuable publications of current economic problems and thought. The purpose of the association is to stimulate thought and discussion of current problems from an economic point of view and membership is open to anyone interested, upon endorsement of a member and payment of small, nominal dues.

**American Federation of Labor** was formed at a convention in Columbus, Ohio, in 1881 by a small group of craft union leaders headed by Samuel Gompers, English-born cigarmaker. Gompers was elected president and was re-elected each year except 1893 until he died in 1924.

Samuel Gompers laid down two cardinal principles that the Federation still cherishes: (1) keep the labor movement non-partisan in politics and (2) maintain the Federation as a "ring of sand" around autonomous craft unions. He evolved these principles from the failure of the Knights of Labor, the labor organization that the American Federation of Labor succeeded as keystone of the American labor movement.

The Knights of Labor collapsed after it tried to band all the laboring classes into one large union and attempted independent political action.

The American Federation of Labor in 1920 reported a dues-paying membership of 4,078,740. In 1933 its membership dropped to 2,126,796. On Aug. 31, 1937, the Federation consisted of 100 national and international unions; 1,406 local labor unions in the U.S. and Canada; 49 State federations; and 738 city central bodies,



WILLIAM GREEN, 64, president, American Federation of Labor, elected December 19, 1924

with a membership of 3,271,726. It lost a membership of approximately 1,000,000 in 1936 when it suspended the Committee for Industrial Organization unions, but during the following year the Federation redoubled its organization efforts and regained in new members most of the C.I.O. loss. The president of the American Federation of Labor is William Green, a former coal miner and former official of the United Mine Workers of America.

The Federation has a threefold purpose: (1) to organize unorganized workers; (2) to promote the interests of its members through legislative activity and publicity; and (3) to settle disputes among its members. The Federation's annual autumn convention is its final seat of authority. Between conventions the Federation is governed by an executive council made up of the president, secretary-treasurer, and fifteen vice-presidents. It is financed by a per capita tax on member unions, two cents each month for each member of national and international unions and 35 cents a month for each member of directly affiliated local unions. The financial report of the Federation, beginning Sept. 1, 1936, and ending Aug. 31, 1937, showed that the balance on hand, Aug. 31, 1936, was \$569,405.99; the total receipts for the 12 months ending Aug. 31, 1937, were \$1,184,478.99, and the total expenses for the same period were \$1,167,317.57, leaving a balance on hand, Aug. 31, 1937, of \$586,567.41. (See also LABOUR; LABOUR UNIONS; UNITED STATES: Labour.) (E. F. MCG.)

**American Geographical Society.** In 1937, the American Geographical Society, the oldest geographical institution in the United States, completed its eighty-fifth year. Its library and map collections, the largest of the kind in the Western Hemisphere, contained at the end of the year more than 100,000 volumes of book and periodical publications, about an equal number of maps, and some 1,600 atlases. Three new volumes were added to the Society's notable series: *Polish Countrysides* by Louise A. Boyd, *The Frame of the Ancient Greek Maps* by William A. Heidel, and *The Colorado Delta* by Godfrey Sykes. Work was completed on the 102-sheet map of Hispanic America on the scale of 1:1,000,000 on which the Society has had a large staff of compilers and draughtsmen engaged for the past 16 years. A topographical map of some 5,000 sq.mi. in Northern Labrador was constructed, by a special method developed at the Society, from oblique aerial photographs taken under the Society's direction on the Grenfell-Forbes Labrador Expedition of 1931 and supplementary expeditions carried out by Dr. Alexander Forbes in 1932 and 1935. This method was also employed in constructing a series of maps from photographs taken on the Ellsworth Trans-Antarctic Expedition of 1935, published in the July issue of the *Geographical Review*, the Society's quarterly journal. A member of the Society's Department of Technical Training had charge of the climbing of Shiva's Temple and Wotan's Throne and the provisioning of the scientific parties on the Grand Canyon Expedition of the American Museum of Natural History. (R. R. P.)

**American Historical Association** was incorporated by act of Congress in 1889 "for the promotion of historical studies . . . and for kindred purposes in the interests of American history and of history in America." It has (1938) a membership of about 3,300, chiefly recruited from the teachers and writers of history in American and Canadian schools and colleges. Its national headquarters are located at 740 15th street, N.W., Washington, D.C., but its chief administrative officer, the executive secretary, has offices at 226 South 16th street, Philadelphia, Pa. It is governed by a Council elected at the annual meeting and supported by annual dues (\$5) and by the income of an endowment fund of about \$250,000.





TWO OF THE LEGIONNAIRES from Uniontown, Pa., as they solemnly paraded along 8th Avenue, New York

Its activities are many and their scope is wide. It publishes an important series of American legal records, another important series of material relating to the history of America, and a third series of historical monographs covering the whole field of history. It publishes *The American Historical Review*, the most important historical journal in America. It co-operates with the National Council for the Social Studies in the publication of *Social Education*, which deals with the problem of teaching history in the schools. From time to time it has through special committees made contributions of great importance to the sound study of history in the secondary schools. It has done much to assist in governmental surveys of historical source materials in America, and much to protect historical records and historical monuments from destruction. (C. Rd.)

**American Indians:** see INDIANS, AMERICAN.

**American Institute of Architects.** Efforts to revive building and to further Government housing activities in an effective way have claimed much of the attention of the American Institute of Architects and its 70 local chapters. Officers elected for 1937-38 at the Institute's 69th convention June 1937, in Boston are president, Charles D. Maginnis of Boston; vice-president, Frederick H. Meyer of San Francisco; secretary, Charles T. Ingham of Pittsburgh; treasurer, Edwin Bergstrom. Elections to fellowships in the Institute, announced in 1937, were: California, Harris C. Allen, John Blakewell, Jr., Roland E. Coate, John Reid, Jr.; New York, Edward Shepard Hewitt, Eric Keblon; Baltimore, G. Corner Fenhagen, Laurence Hall Fowler, James R. Edmunds; Philadelphia, Ralph B. Bencker, George Simpson Koyl; Chicago, John W. Root, Hugh M. G. Garden; Pittsburgh, Frederick Bigger; Rhode Island, John Hutchins Cady; Texas, Ralph H. Cameron; Boston, H. Daland Chandler; Wisconsin, Henry A. Foeller; Georgia, Hal Fitzgerald Hentz; Minnesota, Roy Childs Jones; South Carolina, Samuel Lapham, Jr.; Washington, D.C., Louis A. Simon; New Jersey, Seymour Williams.

For the first time in its history the International Congress of Architects will hold a meeting outside Europe and will meet in the city of New York in the autumn of 1939, the journal of the American Institute announces. The Institute's 70th convention will be in New Orleans April 19, 1938. The offices of the Insti-

tute are at 1741 New York avenue, N.W., Washington, D.C.

**American Iron and Steel Institute.** The publication and distribution of books and pamphlets continued to be prominent among the activities undertaken in 1937 by the American Iron and Steel Institute in promoting the interests of members of the iron and steel industry in the United States. Certain publications, such as the statistics of iron and steel production, the account of the general meeting of the Institute and the periodical, *Steel Facts*, represented continuations of series. New publications included the first two sections of a manual covering definitions and descriptions of iron and steel products and a booklet describing the manufacture of steel by means of pictures and brief text. The Institute likewise continued during the year its work of compiling and publishing a series of freight tariffs showing freight rates on iron and steel products from important origin points to principal destinations. Five tariffs have been published, available to all members of the industry, at relatively low cost, a service which only a few of the largest could afford for themselves. Another important activity was the providing of accurate information relative to the industry. Thousands of inquiries from editors, writers, students and the public generally were answered by members of the Institute staff during the course of the year. (W. S. To.)

**American Legion.** The outstanding feature of 1937 for the American Legion, organization of the World War veterans of the United States, was the 19th annual convention held in New York city in mid-September. It was the biggest convention gathering in Legion history and drew 110,000 Legionnaires, wives and children.

The climax of their visit was a parade up Fifth avenue on Sept. 21, which lasted 18 hours and in which over 80,000 marchers and 500 bands participated.

The keynote of the convention was world peace. With advance payment of adjusted service certificates still under way, Legion officers discouraged further demands for aid and denied that the



WITH 110,000 AMERICAN LEGIONNAIRES attending their 19th yearly meeting, it was almost dawn of the second day of marching before the annual parade was finished



group was a pension-seeking organization. Instead they stressed neutrality legislation and requested a large army and navy for defence.

The group's policy of avoiding political issues was evident in the avoidance of a declaration on President Roosevelt's court plan and in a statement of neutrality in labour disputes. As customary also, a strong stand was taken against all principles and bodies considered as subversive of American institutions.

As to decisions regarding matters more closely connected with internal policy, Daniel J. Doherty of Woburn, Mass., was selected to succeed Harry W. Colmery as national commander and Los Angeles was chosen as the 1938 convention city. The 1,342 delegates representing a membership of nearly 1,000,000 staged their most serious revolt when they opposed a uniform contract concluded by their national officials. Otherwise business proceeded smoothly and the convention adjourned with 1,800 members leaving for a pilgrimage to Europe while the rest returned to their homes having spent an estimated \$5,500,000 during their five-day visit. (See also BRITISH LEGION.)

**American Library Association,** the official organization of librarians in the United States and Canada, consists of librarians, library trustees, and others interested in libraries. Founded in 1876, it functions through a headquarters staff of over 65 persons and through 75 voluntary boards and committees. International in character from its beginning, the Association had representatives from every major country in its 1937 membership which numbered over 14,000.

The oldest and largest association of its kind, it is affiliated, formally or informally, with more than fifty other library associations in America and abroad.

One of the chief objectives of the Association is complete and adequate library coverage for the United States and Canada. In 1937 approximately 50 million people in the two countries—most of them in rural areas—were without access to a public library. Other objectives are: "to assist libraries to operate with the utmost economy and efficiency; to improve the status of librarianship; to build for the future of library service by drawing into the profession some of the best qualified young men and women; and to promote studies which will tend to establish on a solid foundation the library's place in the governmental and social structure."

Standards of training for librarians are set by the Association and a free employment service is offered to libraries and individual librarians. The total income for the last fiscal year was more than \$312,000, but less than \$100,000 of it was unrestricted. The Association's endowment is now approximately \$2,194,000.

The Association issues three periodicals: *Bulletin of the American Library Association*, a monthly which includes the annual reports, the conference proceedings, and the yearly handbook; the *Booklist*, published semi-monthly as a guide to the selection and purchase of current books; and the *Subscription Books Bulletin*, a quarterly which presents critical estimates of subscription books and sets sold currently by canvassing agents. In addition, the Association published over 40 other professional books and pamphlets during the year.

At the Midwinter Conference, held in Chicago, Dec. 28–30, 1936, the Council, the policy-forming body of the Association, endorsed the general programs of Government work relief, especially those sponsored and supervised by competent library agencies; advocated the continuance and publication of the Federal Index of American Design, a Federal art project designed to provide pictorial records of thousands of objects that reveal American traditions in the useful and decorative arts; endorsed the Histori-

cal Records Survey, conducted by the Works Progress Administration to make such materials in local town and county records and in State archives and church records accessible to students, scholars, and professional workers; and authorized a series of ten Latin-American library fellowships covering a five-year period— if and when funds are available.

The 59th Annual Conference of the A.L.A., held in New York city, June 21–26, 1937, was attended by over 5,500 persons, the largest attendance in its history. On this occasion the John Newbery medal, awarded annually by the Section for Library Work with Children for the most distinguished children's book written by an American during the year, was presented to Ruth Sawyer for her book, *Roller Skates*. Announcement was also made that a new medal to be called "Randolph Caldecott Medal" will be presented annually to the artist of the most distinguished picture book for children published in the United States during the year. Officers elected for 1937–38 were: Harrison Warwick Craver, New York city, president; Milton James Ferguson, Brooklyn, N.Y., first vice-president and president-elect; Herbert S. Hirschberg, Cleveland, Ohio, second vice-president; and Matthew S. Dudgeon, Milwaukee, Wis., treasurer. Carl H. Milam is executive secretary of the Association, with headquarters at 520 North Michigan avenue, Chicago, Illinois.

The 1937 Midwinter Conference was held in Chicago, Dec. 27–30, and the 60th annual conference will be held in Kansas City, Missouri, June 13–18, 1938. (See also LIBRARIES; for British Association see LIBRARY ASSOCIATION.) (M. O. P.)

**American Literature.** Nineteen thirty-seven was not, so far as can be discerned at the present time, an heroic year in literature. No great new reputations rose flaming above the horizon; no old fames went tumbling into ruins; it seems not to have been a year of "great" books. Yet it was a year in which many good novels were published, an army of autobiographies which, perhaps even more than the novels, revealed the temper of the time, and several other books worthy of attention.

The best-seller lists, from Maine to California, for most of the year, continued to be dominated by two books published in 1936: Margaret Mitchell's romantic story of the South in the Civil War, *Gone With the Wind*, which shattered all sales records of the previous half century, and Dale Carnegie's *How to Win Friends and Influence People*. Neither attracted distinguished attention from the critics. Toward the close of the year Kenneth Roberts' high-spirited story *Northwest Passage* and Hendrik Van Loon's very personal history of *The Arts* took the lead; the critics were kinder to them.

In *The Arts* Mr. Van Loon, who had previously outlined history, and summarized the Bible and geography, undertook a rapid survey of the patterns of human expression—painting, sculpture, architecture, music—produced by "that divine discontent which is not only the beginning of all wisdom but also the beginning and end of all great art," and again gave evidence that he is even more artist than historian. (See PUBLISHING.)

Yet many of the novelists of 1937 evidenced a curious passion to be rather historians than artists. Kenneth Roberts, writing *Northwest Passage*, revealed a strange inferiority complex. He told the rip-roaring story of Major Robert Rogers, who in 1759 led his green-clad rangers from Lake Champlain to sack the Abenaki village of St. Francis in Quebec, and led them—most of them—back through hell and high water to the outermost settlements on the Connecticut river. No more stirring reconstruction of the harsh days of the French and Indian war has ever been made; and the first half of Mr. Roberts' book may well win a kind of permanent semi-adolescent audience such as feasts perennially on



MARGARET MITCHELL, author of *Gone with the Wind*

the works of Cooper and of Dumas. But Mr. Roberts was not content with this: he felt constrained to prove himself not only novelist but historian, and so weakened his book by continuing the anti-climactic story of the real Rogers, who, made governor of Michilimackinac, boozed and gambled his way to a debtor's prison and a liar's after-life.

A limited edition of this book was printed in two volumes, the second containing documents to prove the historic authenticity of the story. Neil Swanson's novel of Western Pennsylvania, *The First Rebel*, was similarly documented. Several other historical novels of the year included bibliographic footnotes to legitimize the tale. Does this indicate a weakening of the creative impulse—novelists were once proud to boast their powers of sheer invention—or a new respect for fact?

**Historical Romance.**—The vogue of the historical romance continued unabated. Those who saw in it a genuine reinvestigation of the backgrounds of American history were confirmed in their view by the success, not only of *Northwest Passage*, but of Esther Forbes's story of Englishmen and Indians when bayberries and sweet fern still grew beneath the pines on Boston's Beacon Hill, *Paradise*; of Phil Stong's lusty epic of old Iowa, *Buckskin Breeches*; of Archie Binns's idyl of the Puget Sound country, *The Laurels Are Cut Down*; of Conrad Richter's singing story of that war of the "nesters" against the cowmen which broke up the ranch empires of New Mexico, *Sea of Grass*; and of Slogum House, Mari Sandoz's lurid picture of cruelty as she knew it, less than half a century ago, on the raw North-west Nebraska frontier. And in J. P. Marquand's *The Late George Apley* the conflicts of generations, races and classes in old Boston were faced, without the literary texture of George Santayana's *Last Puritan*, but with a greater novelist's skill.

**Fiction.**—Perhaps the American novel of the year was John Steinbeck's cruel, compassionate little idyl of homeless men, *Of Mice and Men*. This is the story of "guys that work on ranches, the loneliest guys in the world. They don't belong no place. They make a little stake and then they go into town and blow it in, and the first thing you know, they're poundin' their tail on some other ranch." But Lennie, the strong, dumb boy, never quite believed it. "We gotta future," he used to say. "Some day we're gonna get the jack together and we're gonna have a little house and a couple of acres an' a cow an' some pigs, an' live off the fatta the lan'."

The stark violence of the conclusion of this story offended some readers; it is almost always present in Steinbeck's work, along with the gentle musing sense of pity which gives the violence meaning. *Of Mice and Men* gave evidence of a sense of composite

form not always present in this novelist's work; it brought him also a national fame not attained by *Tortilla Flat* and *Pastures of Heaven*, which still seemed to some critics his best work. It also demonstrated the man's amazing and fecund versatility.

Ernest Hemingway's 1937 novel, *To Have and Have Not*, was variously received. It had been many years in gestation; Hemingway, it was reported, had written and rewritten, cut and re-cut it. And it turned out a curiously uneven and patched piece of work. The story of a Key West rum-runner who lost out, it seemed to begin as a conventional Hemingway hymn in praise of blood; it ended with a hint of a social gospel, which had hardly been established earlier in the tale. After his great war story, *Farewell to Arms*, Hemingway had seemed fearful of real writing: he had escaped in one book to the bull-rings of Spain, in another to an African safari. Many critics felt that he had written himself out; *To Have and Have Not* made them revise their prognostications. Hemingway had at last come home to America; and he was refusing to be the rich playboy of his later stories. A new seriousness had come into his work; and he still commanded the most powerful emotional rhythm in current American prose.

Another middle-aged writer of the "hard-boiled" school, James M. Cain, who had proved an amazing command of the writer's technique in *The Postman Always Rings Twice*, proved again his ability to convey emotion in swift hard prose, in *Serenade*. But the subject matter of *Serenade* suggested that Mr. Cain was content to squander his amazing narrative talent on material of little meaning.

Two American writers who had already proved their mettle wrote remarkable novels on similar themes: Oliver LaFarge, whose *Laughing Boy* won the Pulitzer prize in 1929, in *The Enemy Gods*; and Edwin Corle, author of *Mojave*, in *People on the Earth*. Both novels dealt with the problem of the Navajo boy, trained in white schools, who wants to live with and serve his own desert people. Both catch the tragedy of past miseducation and the romantic hope that an ancient American civilization which has never died may find new vitality in the 20th century.

Louis Bromfield's novel of India, *The Rains Came*, which was perhaps intended as a parable of the crisis of all Western civilization, hardly enhanced his reputation. William Saroyan's fourth volume of short stories, *Little Children*, revealed no new facets of his unique and genuine talent. Frederic Prokosch, whose *The Asiatics* was one of the memorable books of 1935, repeated that curious exercise in passionate nihilism in another eerie novel, *The Seven Who Fled*, but awakened doubts of the range of his talent. One of the books which most strikingly confirmed the promise of an earlier first novel was the work of a Negro novelist, Zora Hurston, whose *Their Eyes Were Watching God* struck a rich, mellow note, telling a salty story of her own race.

**First Novels.**—It is dangerous business to point to first novels. The United States is a land of promising first novelists, just as England is a land of competent craftsmen of little promise. But we have singularly few novelists who maintain their interest, year after year. Among 1937's crop of beginners, these, perhaps, stand out: Clyde Brion Davis, author of *The Anointed*, a witty and original novel of a slightly cracked seaman who was curious about God; William Maxwell, who, in *They Came Like Swallows*, painted an exquisite picture of a mother as seen through her young children's eyes; and Theodore Strauss, the young author of *Night at Hogwallow*, who struck a new note in lynching stories by introducing two white heroes whose fists felt "like the hammer of God" as they fought to stop the blood-crazed mob.

**Biography.**—Easily the outstanding American biography of the year was Marquis James's *Andrew Jackson: Portrait of a President*, and not the least interesting page in that book was a footnote to the bibliography, in which Mr. James expounded his theory that



if people read more fiction than biography, that was chiefly the fault of biographers who did not know how to write.

"A sizable class of readers," he said, "turn to novels for dependable representations of life and character, finding them in greater proportions than in the people of biography. . . . In no biography that comes to mind offhand is there a character so real to me as Huckleberry Finn, Becky Sharp, Tom Jones or George Babbitt." Mr. James himself makes biography read like the liveliest fiction; Andrew Jackson struts and marches through his pages.

Vincent Sheean's *Personal History*, published in 1935, set a style; and a host of his generation, which came of age at the very brink of the World War, have been telling their stories. This was the "lost generation" which sought solace in Paris and on the Riviera; but the 1937 crop all sing the glories of returning to America.

Orrick Johns, Missouri poet, in *Time of Our Lives*; John Gould Fletcher, the imagist poet of Little Rock, Ark., and London, in *Life Is My Song*; Evelyn Scott, novelist born in Clarksville, Tenn., in *Background in Tennessee*—all discover new meaning in their native soil.

Burton Rascoe, of Kentucky, Oklahoma, Chicago and New York, stresses a similar motif in *Before I Forget*; and Thomas Benton, the Missouri painter, after painting his defiant mid-West rooster-creed on the walls of his native State's capitol, put it into words in his roistering autobiography, *An Artist in America*.

A less philosophical, but significant, writer's biography was Henry Harrison Kroll's *I Was a Share-Cropper*. A new segment of America here found its first literary expression, but to many Americans it was more effectively introduced by a remarkable collaboration—*You Have Seen Their Faces*—in which Margaret Bourke-White, with her incomparable camera-art, illustrated the searing picture of share-cropper despair expressed in Erskine Caldwell's prose.

Publication of Catherine Drinker Bowen's *Beloved Friend* revealed in detail one of the strangest and most pathetic love stories in history: the thirteen-year intimacy between the Russian composer, Tschai-kovsky, and Nadejda von Meck, the wealthy widow who, falling in love with Tschai-kovsky's music, supported, consoled and mothered him, wrote him almost daily letters, arranged his daily life but never talked with him face to face.

There were good books in other categories. A unique contribution to the pre-history of China was Herrlee Glessner Creel's *The Birth of China*; a unique picture of present-day China was Carl Crow's picture of the nation as seen through an advertising man's eyes, *Four Hundred Million Customers*. A new kind of nature writing appeared in Clifford Pope's soberly allur-

ing *Snakes Alive*, and still another in Edwin Way Teale's story of backyard researches, *Grassroot Jungles*.

A new step in American attitudes, of no little significance, was taken when the surgeon general, Dr. Thomas Parran, published his frank *Shadow on the Land: Syphilis*; and a new iconoclastic analysis of traditional American symbols found expression in a brilliant and witty book by a Yale law professor, Thurman Arnold's *Folklore of Capitalism*.

It is not an age of great poetry; even Edna St. Vincent Millay's *Conversation at Midnight* did not enhance her great reputation. For despite some lyric lines of a loveliness unmatched by any of her contemporaries, the burden of the conflicting philosophies which Miss Millay sought to express in variant verse was often too heavy a strain for her medium.

Everett Dick's *Sodhouse Frontier* was one of the most original contributions of the year to American history, bringing back to life the beginnings of settlement on the treeless prairies, necessarily a totally different form of life from that familiar in the forested East. Variant points of view on the old South came to light in installments of two large works on early American history: William E. Dodd's *The Old South: Struggles for Democracy*, finding there new patterns of political life, and the third volume of Charles McLean Andrews' *Colonial Period of American History*, which saw in America little but reflections of England's struggles.

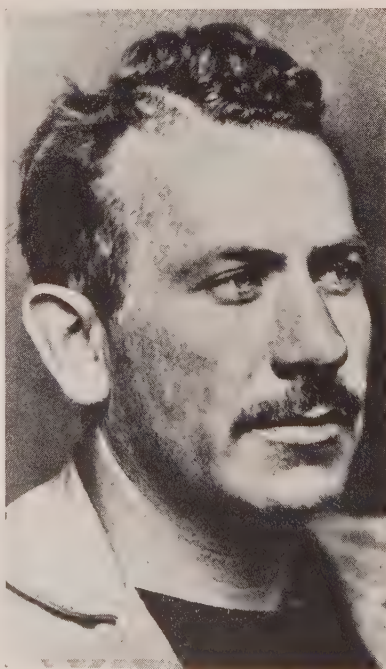
But the most original work of American history of the year was, nominally, not original at all. It was Henry Beston's *American Memory*, a tapestry of impressions of America—from John Smith and William Bradford to Dr. Walter Reed and Henry Adams—so skillfully interwoven, so deftly stitched together with Mr. Beston's love of American soil and his awareness of the Indian heritage, that the whole becomes an original work of art.

A new form of depression literature began to filter into print in 1937: the first volumes of the great *American Guide*, the major enterprise of the Federal writers' project of the WPA, began to appear. A few politicians squirmed at the frankness of *Massachusetts* and *Vermont*; but the people of the States were delighted. *Idaho* was the finest of the early State volumes; but the one signed work in the series, Jeremiah Digges's *Cape Cod Pilot: A Loquacious Guide*, was the wonder-child of the project. For with the inspiration of this rare book it seemed possible that other volumes in the ambitious series might climb out of the Baedeker class into national literature.

(L. Gr.)



KENNETH ROBERTS is the author of *Northwest Passage*



JOHN STEINBECK, recently prominent author of the cruel but compassionate novel *Of Mice and Men*



## American Medical Association

during the year 1937 reached a peak membership of 105,400 making it the largest medical group in the world. It completed an inspection and classification of all the medical colleges in the United States and Canada so as to give credit to those meeting modern requirements of medical education. It carried on the program of hospital grading for acceptable interne service; of the 6,189 registered hospitals, to date 723 were approved for general training and 454 for residencies in the specialties. It has continued to check the extravagant claims for new therapeutic measures, and has given its membership prompt and reliable information in regard to new medicinal preparations, foods for which health claims are made and new appliances used in physical therapy. Through its laboratory, it quickly proved the solvent employed to be the poisonous factor in the falsely labelled "elixir of sulphanilamide" which caused over 73 deaths in the United States. A new Council has been created to study the problems of industrial medicine and surgery.

The subject of the "socialization" of medicine and sickness insurance has excited general attention. It is felt that because of the variations in climate, great differences in distribution of population and varied racial admixtures, the problem is more complex in the United States than in other countries. The American Medical Association is making a careful study of present conditions and observing various plans of deferred payments and pro-rating charges under local medical societies to meet present economic conditions. Its House of Delegates definitely pronounced in favour of free choice of physicians and individual responsibility to the patient.

The *Journal of the American Medical Association* with the journals for the various specialties have set a high standard of medical journalism. Through their wide diversity of information they have contributed an important influence on medical progress in the United States. (See also BIRTH CONTROL: *United States*; BRITISH MEDICAL ASSOCIATION.) (J. H. J. U.)

**American National Red Cross:** see RED CROSS.

**American Newspaper Guild:** see NEWSPAPERS.

**America's Cup:** see YACHTING.

## Ames, Winthrop

(1871-1937), American theatrical producer, first won wide recognition for his presentations of Shakespearean and other classics at the New theatre in New York. After leaving this enterprise in 1911, he continued to produce outstanding plays. In addition to those listed in the *Encyclopaedia Britannica*, Vol. 1, p. 807, his numerous productions included *The Green Goddess* and *Old English*, which established George Arliss as a star, and the successful Kaufman-Connelly fantasy, *Beggar on Horseback*. Born at North Easton, Mass., Nov. 25, 1871, he died in Boston, Mass., Nov. 3, 1937.

## Anaemia.

During 1937 the following advances have been made in our knowledge of anaemia: Further confirmation has been developed of an interaction between a gastric (intrinsic) factor and a food (extrinsic) factor normally preventing the development of pernicious anaemia. Resemblances have been shown between the conditions essential for clinical activity of the gastric factor and a proteolytic agent (not pepsin) acting *in vitro* on casein.

The effect of liver extract in stimulating formation of red blood cells may be exerted by an augmentative action of three chemically distinct accessory factors upon a primary factor. Dogs fed certain deficient diets and aminopyrine or indole develop severe anaemia curable by yeast autolysate or liver extract. Macrocytic

anaemia is produced in pregnant women by a diet deficient in the vitamin B complex.

New evidence is given that the hypophysis probably is essential for normal blood formation. The United States Pharmacopoeia has attempted to define and label the approximate potency of liver and stomach preparations in terms of units. Some evidence is given that considerably more iron is retained following oral administration than can be accounted for by increase in haemoglobin concentration. The importance of growth, blood loss and controlled absorption of iron in the causation of iron deficiency anaemia is emphasized. New light is shed on the mechanism of iron transportation with reports of prompt increases of iron in the plasma following its oral administration. (G. R. M.)

**Anaesthetics:** see MEDICINE: *New Materials and Apparatus*.

## Andaman and Nicobar Islands.

These islands, a province of British India, form the summits of a submarine range connecting Burma and Sumatra. The Andaman group has a land area of 2,508 sq.mi.; and the Nicobar group of 635 square miles. The population of the islands is 29,463. The indigenes are among the most primitive people in the world, and the islands are occupied only for the Indian penal settlement at Port Blair in the Andamans. Transportation for crime has now ceased, and the Andamans are being developed as a free colony.

## Andorra.

Andorra has experienced certain repercussions of events which have taken place in Spain near the territory of Andorra. Economic difficulties have been surmounted, thanks to the road communications between Andorra and France. Safety has been assured by the force of French police which has been in Andorra since Sept. 1936 to protect the Andorrans entrusted to them by the chief of the French State, co-prince of Andorra.

On Oct. 27 and 28 very serious floods ravaged Andorra. With help, both financial and technical, from France, measures were undertaken to restore communications.

**Anemones:** see HORTICULTURE: *Anemones*.

## Anglican Communion, The.

Within the communion of the Church of England in the British Isles are:

The Church in Wales, comprising six dioceses with 1,750 churches, 194,085 Easter communicants (a decline of 1,659 on 1936 figures), and 138,286 Sunday school children (a drop of 9,189).

The Church of Ireland, which received by its representative body contributions from voluntary sources during the year amounting to £190,712. The 25th General Synod was held in Dublin in May.

The Episcopal Church of Scotland, with 127,151 permanent members, 60,333 communicants, and 347 clergy. The annual meeting of the representative Church Council (corresponding roughly to the Anglican Church Assembly) was held in April. It has a declared aim in providing a minimum stipend of £300 per annum and a free house for every rector of an incumbency and priest-in-charge of an independent mission, and has reached the point of £284 per annum with house. Diocesan youth conferences were held in Edinburgh and Glasgow.

The jubilee of the Bishopric in Jerusalem was celebrated in June, and in October that of the Chinese and Japanese Churches. The ninth triennial meeting of the General Synod of the Chinese Church was held at Foochow. In Japan, an evangelical campaign



was undertaken throughout the dioceses and mission districts.

In 1937, the Church of England Council of Empire Settlement was dissolved and was succeeded by the Church of England Advisory Council of Empire Settlement, with the Earl of Bessborough as chairman, whilst a £200,000 scheme was put forward for a cathedral at Wellington, the capital of New Zealand. There are now 248 dioceses outside of England, Scotland, Ireland, and Wales, in the Church of England Communion, and, in three dioceses of South India, of 312 clergy, 287 are Indians and 25 Europeans. In Africa two-thirds of the 600 clergy are African. (See also FOREIGN MISSIONS.)

**Angling.** American records for ocean fish caught by sportsmen in 1937, according to *Yachting*, include the following: Tuna, 821lbs., time 4½ hours, caught by John S. Martin of New York off Liverpool, Nova Scotia, and 33lbs. heavier than the previous North American record. Tuna, 759lbs., caught by Mrs. Earl Potter of Brookville, Long Island, and 760lbs., caught by Mrs. William Chisholm of Cleveland, Ohio, both in Nova Scotia waters. Blue marlin, 608lbs., caught by Gilbert Easton; 580 and 508lbs., caught by Hugh Rutherford; 460lbs., caught by Mrs. Michael Lerner, all off Cat Cay and Bimini. Wahoo, 91lbs., caught by Harry J. Tucker off Bermuda, the Atlantic record and five pounds heavier than the previous record of 1911. Curved yellow tuna, 265lbs., caught off Honolulu by James W. Harvey. The world's record rooster fish, 72lbs., is reported to have been caught at Panama.

**Anglo-Egyptian Sudan.** The year 1937 was an interesting one for the Anglo-Egyptian Sudan. The reorganized provincial administration came into force. In lieu of the 13 provinces, into which the country had been divided since the earliest days, there are now only eight provinces, *viz.*: the Northern province, which includes all the country north of Khartoum, previously divided into the Wadi Halfa, Dongola, and Berber provinces; Khartoum; Kassala, which includes the Red sea littoral; Blue Nile, which includes the Ghezira and the old Fung and White Nile provinces (the latter is still a sub-province); Kordofan, with which is joined the Nuba mountains; Darfur; Upper Nile, and the Equatorial province, which includes the old Bahr-el-Ghazal and Mongalla provinces. The absorption of White Nile sub-province with Blue Nile will take place in 1938. Greater efficiency and economy are expected to result from this regrouping.

In accordance with the terms of the Anglo-Egyptian treaty of alliance signed in London on Aug. 26, 1936, which provided that British and Egyptian troops are to be placed at the disposal of the governor-general for the defence of the Sudan (in addition to the Sudan defence force), the 7th battalion of Egyptian infantry was transferred from Egypt to the Sudan, where it arrived on Dec. 29, and was posted to Port Sudan, with two companies in Khartoum.

The governor-general appointed for the first time an Egyptian officer to his personal staff, as military secretary, and an agreement was come to regulating the indebtedness of the Sudan and the mode of settlement to Egypt for advances made for development purposes since the Occupation.

The year was one of peace and prosperity, good rains, and excellent crops. Particularly was it marked by a record cotton crop in the Ghezira, which reached 890,907 kantars, as compared with the previous best of 805,051 kantars. For the first time auctions were held at Port Sudan in addition to Liverpool.

Government finances were good. Revenue up to Dec. 31 amounted to £E.4,769,263, £E.306,954 more than in 1936.

Trade was brisk, and up to Nov. 30 the figures were: imports

£E.5,558,438; exports £E.7,838,723; compared with £E.4,822,977 and £E.5,104,013 respectively in 1936. (A. MN.)

**Angola** (Portuguese West Africa) is a Portuguese colony extending S. from the mouth of the Congo to C. Frio, 18°S. lat., and E. to the Belgian Congo and Northern Rhodesia. The governor-general, Colonel António Lopes Mateus, resides at Luanda. The area is 487,790 sq.mi., and the pop. c. 3,225,000, of whom c. 59,000 are Europeans. The new capital is to be Nova Lisboa.

Lobito bay is an important harbour, taking a share of the trade of Belgian Congo and Northern Rhodesia, for which it is the nearest outlet to the sea. The Benguela railway serves these territories, and Lobito bay is connected by rail via Katanga and Rhodesia with Beira in Portuguese East Africa.

In Jan. 1937 negotiations were said to be in progress between Germany and Portugal with a view to affording the former country opportunities for economic expansion in Angola, including the exploitation of mines and constructional work by German iron and steel and chemical firms.

Imports and exports for 1936 were valued at £1,340,874 and £2,799,141 respectively, and the 1937 budget was estimated to balance at £1,943,950. The unit of currency is the angolar (equivalent to the Portuguese escudo) of 100 centavos. The main part of the revenue is supplied by shipping and railway dues. A scheme is in development for settling colonists on farms of not less than about 1,000 acres. The principal products are sugar, coffee, palm oil, cotton, wheat, and maize; and an unusual African export is dried and preserved fish.

**Animal Fats:** see VEGETABLE OILS AND ANIMAL FATS.

**Annam:** see FRENCH INDO-CHINA.

**Antarctica.** The last decade has been one of notable achievements in our knowledge of Antarctica; vast amounts of new data have been amassed, and only a fraction of the results of the many expeditions that have been in the field has yet been worked up and digested. Therefore, it is only possible here to sketch in roughly the more notable changes in our conceptions of the physical features of Antarctica.

Perhaps the most striking advance has been the discovery of a vast plateau filling the region between King Edward VII land and Graham land and the addition of several sizable mountain groups in this area to the map. Notable among these are the Edsel Ford range (Byrd's first and second expeditions); the Eternity range and the Sentinel range (Ellsworth's flight). The plateau appears to run from King Edward VII land to the Queen Maud range, thus precluding the possibility of a strait's dividing Antarctica into two parts, as hypothesized by some geographers. The tracing of the boundary between this land mass and the Ross Shelf ice has also delimited the eastern shore of the Ross sea.

Another significant geographical achievement has been the demonstration by aerial mapping (Ellsworth) and surface observations (British Graham land expedition) that Graham land, formerly considered an island, is an integral part of the Antarctic continent.

Almost equally striking is the strong indication from aerial pictures (Ellsworth) and the observation of a surface sledging party (British Graham land expedition) that Alexander island is a part of the continent with a large fiord separating it from Graham land.

From the air the Queen Maud mountains were observed to extend several hundred miles farther to the east than previous observation had shown. This new extension received the name Horlick mountains (Byrd's second expedition).



Much new light has also been shed on the geological structure of the continent. A new cross section of the Queen Maud mountains up Thorne glacier has demonstrated the existence here of the so-called Beacon sandstone—coal-bearing sedimentary strata. In this area the ice cap was also found to be overriding the mountains more extensively than in the western part of the range (Byrd's second expedition).

A preliminary geological reconnaissance of the Edsel Ford range indicates that it consists largely of greatly folded metamorphosed sediments intruded by masses of igneous rocks of batholithic proportions. These intrusives are high in sodium and potassium and consist mainly of leucogranodiorites and granodiorites. From the meagre data so far studied it appears that a great series of arkosic sandstones and shales laid down on a pre-Cambrian basement complex was closely folded and subsequently deeply intruded by acid magma. Following this there ensued a long period of erosion, glaciation, and the extrusion of olivine basalt in the Pleistocene period (Byrd's second expedition).

It is still premature to make any positive statement as yet; but there is reason to believe that the Edsel Ford range is one of the blind ends of the virgated Andean mountain structure continued through Graham Land and then westward, and that the intrusives in the Edsel Ford range are differentiated high in sodic and potassic contents of the same magma that was intruded in the more easterly sections of the system.

The application of seismic sounding techniques has shed new light on the thickness of the Ross Shelf ice and the ice cap covering the plateau in the Pacific quadrant of the continent. Much of the floating part of the Ross Shelf ice was found to be over 600ft. thick and some 1,500 feet. On the new plateau ice thicknesses up to 2,200ft. were measured. The existence of numerous shoals and at least one island above sea level was also ascertained. These furnish a retaining structure for the Shelf ice and go far towards explaining the persistence of many of its features, such as the Bay of Whales (Byrd's second expedition). A new survey of the sea front of the Shelf ice showed that between 1912 and 1935 it had advanced northward an average of 12 nautical miles (13.8 statute miles) along the whole front between Ross island and the Bay of Whales (Byrd's second expedition).

The coast line of the Australian and African quadrants has now been largely filled in (Mawson, "Discovery II," Norwegian whalers). In place of the great blanks which were the most conspicuous feature on the maps of this region a decade ago, there are now only a few scattered reaches of small extent still marked "unexplored." Several ranges of mountains have been discovered here and there, and one in Princess Ragnhild land is of great size. It appeared from the air to extend for several hundred miles parallel to the shore about 140mi. inland and to reach an altitude of 10,000ft. (Lars Christensen). (See also ANTARCTIC EXPLORATION; EXPLORATION AND DISCOVERY.) (R. E. B.; K. L. R.)

**Antarctic Exploration.** The ships "Discovery II" and "William Scoresby," of the British Discovery Committee, engaged almost continuously in oceanographic work in Antarctic waters during 1936 and 1937. Interrupting its oceanographic work, the "Discovery II" joined the search for Lincoln Ellsworth and his pilot, Herbert Hollick-Kenyon, and on Jan. 15, 1936, found them safe at Little America, after a trans-Antarctic flight of some 2,200mi. from Dundee island which revealed the topography of a wide strip of hitherto unknown territory. Among the important discoveries were the non-existence of Stefansson strait except as an ice-filled inlet; a range of mountains (named Eternity range by Ellsworth) south of this inlet rising to 7,000 to 12,000ft. and apparently continuing south-eastward the axis of the mountains of Graham Land; and a soli-



RESCUE PARTY from the "Discovery II" which found Lincoln Ellsworth and his pilot, Herbert Hollick-Kenyon, in Little America

tary range (named Sentinel range) rising to an estimated 13,000ft. from the great ice-covered, 6,000-7,000ft. plateau at about longitude 88° W. between parallels 60° and 65° S. The segment between the 80th and 120th meridian was claimed for the United States and named James W. Ellsworth Land after the explorer's father. From aerial photographs taken on the flight topographical maps covering some 12,000 sq.mi. were constructed by a method developed at the American Geographical Society.

With Ellsworth on board, the "Discovery II" reached Melbourne on February 16. En route the Balleny islands were surveyed, Row island was determined as nonexistent, and the height of Young island fixed at 3,000ft. instead of 12,000ft. as reported by Balleny in 1839. Leaving Melbourne on March 4 the "Discovery II" continued her voyage. During January and February 1937 surveys of the South Shetland and South Orkney islands were made. The ship again left England Oct. 2, 1937, for a 20-months circumpolar cruise.

Important explorations on the Antarctic continent were concluded by the British Graham Land expedition (1934-37) led by John R. Rymill. From a base established in February 1936, in the newly named Debs islands (lat. 68° 10' S., long. 66° 52' W.) a number of reconnaissance aeroplane flights were made revealing new coasts, mountains, and glaciers. In July two parties sledging north from the base surveyed some 250mi. of complicated coastline. A sledge party leaving on Sept. 6 for an 11-weeks, 600mi. journey to the south carried out surveys along the west coast of Graham Land and along a 15mi.-wide strait some 200mi. long separating Graham Land from Alexander I island. Surveys of over 450mi. of coast southward from Matha bay revealed that no channels cut Graham Land as previously indicated by Wilkins. Another party surveyed across Graham Land in lat. 69° 50' S. and mapped 140mi. of the east coast. The results of the expedition's two years of work will be a major contribution to knowledge of the Antarctic.

In the African quadrant, Lars Christensen headed his fourth Antarctic expedition, leaving Capetown in the ship "Thorshavn,"



Dec. 28, 1936. On Feb. 4, 1937, new land was discovered from the air between Princess Ragnhild Land and Queen Maud Land in lat.  $69^{\circ} 30' S.$ , long.  $34^{\circ}$  to  $40^{\circ} E.$ , and named Prince Harald Land. A flight on February 6 disclosed a 10,000–13,000-foot mountain range extending 200 miles westward from lat.  $71^{\circ} 31' S.$ , long.  $20^{\circ} E.$  Approximately 31 flying hours were devoted to taking 2,200 aerial photographs, covering 30,000 square miles of territory and including 1,200 mi. of coast. (See also EXPLORATION AND DISCOVERY.) (L. EL.)

**Anthropology.** Anthropology, the science of race and culture, has recently gained in general interest and academic recognition largely through the effervescence of racial doctrines, the reopening of colonial issues, and events connected with the westernization of China and Egypt, India and Japan. In Europe the widening rift between democracies and dictatorships is forcing us to rethink and redefine such concepts as "progress" and "cultural efficiency," "development" and "morality," "law," "religion," and "value," on a broad, comparative, that is anthropological, basis. In all this, anthropology has itself been also forced to consolidate its spheres of activity and influence, to clarify its concepts, and to define its methods and aims. The older, more ambitious schemes, such as the discovery of origins, stages, and historical connections, demand, it is felt, a fuller understanding of what culture really is.

The first task of scientific anthropology must consist in the analysis of culture and cultural process. The demographic, economic, legal, and educational aspects of primitive communities have now become the main subject-matter of anthropology, in lieu of the more exotic phenomena, such as cannibalism, head-hunting, the couvade, and strange taboos. The nature of human marriage and family, of the State and of kinship organization, of faith, ritual, and ethics, must be understood before we take up questions of how they came into being, developed, and diffused.

**United States.**—The dominant trend in the United States still remains historical. Prof. Kroeber has recently been sponsoring statistical developments of the *Kultur-kreislehre*, following the earlier work by Prof. Jan Czekanowski of Lwów (Poland), and his pupil, S. Klimek. A new theoretical point of view in cultural anthropology has recently been developed in the school of Prof. F. Boas, led mainly by Dr. R. Benedict, Mr. Gregory Bateson, and Miss M. Mead. Their theoretical approach, that the "spirit" or "genius" of each individual culture has to be studied through some sort of intuitive empathy rather than through strictly scientific analysis, is best formulated in R. Benedict's *Patterns of Culture*, 1935. On this issue it differs from the approach advocated by the functional school of B. Malinowski (see *Human Affairs*, article by B. Malinowski, 1937), and the structural approach of A. Radcliffe-Brown.

Among the new text-books representing the American point of view must also be mentioned *Anthropology*, by A. A. Goldenweiser (1937), and R. Linton's *The Study of Man*. Two articles, by A. L. Kroeber, *History and Science in Anthropology* (in *The American Anthropologist*, 1935), and A. Lesser, *Functionalism in Social Anthropology* (*ibid.*), also give a good idea of present-day methodological and theoretical currents in American anthropology.

**Great Britain.**—Among the important literary events in British anthropology must be singled out the appearance, in 1936, of *Aftermath*, a supplementary volume to *The Golden Bough*, and, in 1937, of *Totemica*, an additional collection of evidence bringing up-to-date Sir James Frazer's researches on this subject. The volumes testify to the vitality both of the author and of the British school of anthropology.

**France.**—In France, the Institut d'Ethnologie at Paris has or-



SKULL AND SKELETON of a different and primitive type of Indian, discovered in the Sacramento Valley, California, burial mound of probably 15,000 years ago

ganized a number of field research expeditions to Africa, Indonesia, and America, and carries on the publication of valuable monographs, to mention only those of H. Labouret, M. Leenhardt, M. Griaule, and J. Soustelle. Members of the French school, in its origins largely influenced by anthropological research—Durkheim's work was determined by his ethnographic interests—were able to exchange ideas with their foreign colleagues, and show the advance made by French anthropology and sociology towards the empirical viewpoint.

**Scandinavia.**—In Scandinavia, in addition to the intensive study of Nordic folklore, general ethnographic work is being carried out, in Sweden by G. Lindblom, W. Kaudern, and other pupils of the late A. E. Nordenskiöld; in Denmark, where K. Birket-Smith is continuing the work of W. Thalbitzer and K. Rasmussen; and in Norway, where the Institut for Sammenlignende Kulturforskning is arranging and publishing lectures on the comparative study of cultures, in which Norwegian and foreign scholars, among the latter F. Boas, M. Mauss, M. Granet and B. Malinowski, have taken part.

In Holland and her colonies, practical anthropology as well as scientific field-work is being carried on steadily through the work of the Colonial Institute at Amsterdam and the Department of Ethnology at Leyden. In 1937 Prof. J. P. B. de Josselin de Jong published the first volume of his studies in Indonesian culture, the result of field-work over in the Dutch Indies.

In Belgium, the work in anthropology centres upon the colonial problems of the Congo; it is connected with the work of the museum at Tervueren and the Institut Royal Colonial Belge, and is published by these institutions, and in Kongo-Overzee.

**Germany.**—It would be incorrect to assume that German anthropology is now working altogether under the influence of the official doctrines of Nordic superiority in race and culture. *Zeitschrift für Rassenkunde*, edited by E. Freiherr von Eickstedt, probably still the best journal on physical anthropology and racial problems, is notably free from questionable or tendentious articles. The new text-books: *Lehrbuch der Völkerkunde* (edited by K. T. Preuss, with contributions by Thurnwald, Preuss, L. Adam, and Westermann); Prof. R. Thurnwald's *Die Menschliche Gesellschaft* in five volumes, and Pater W. Schmidt's *Handbuch der Methode der Kulturhistorischen Ethnologie*, the two last mentioned published in 1937, are scientific statements of anthropological problems, unaffected by any racial or nationalistic ideas.

To the critical study of the more extreme types of racialism is devoted the periodical, *Races et Racisme*, published by a research group of the same name in Paris, and supplying information on political manifestations, legal decisions, and newspaper utterances, made in the name of racial doctrine.

Physical anthropology has not yet given its final verdict, even on the question as to whether the concept of "race" is scientifically



valid. "It may be doubted whether the term 'pure race' carries with it any meaning whatsoever . . .", writes J. C. Trevor (*Science and Society*, 1937, vol. I, No. 4), summing up the views of J. M. Morant (article in *Zeitschrift für Rassenkunde*, vol. II, 1935), A. C. Haddon and J. S. Huxley, *We Europeans* (1935), and most of the American anthropologists (F. Boas, T. Wingate Todd, E. S. Hooton, M. J. Herskovits), whose experimental work has largely invalidated the concept of "stability of race," as well as its genuinely genetic character. Prof. R. Ruggles-Gates, on the other hand, maintains the view that "living man represents three or more species" (*Man*, 1936, No. 218, and 1937, No. 32). This view has the support of Sir Arthur Keith and the majority of competent German anthropologists. Even less consensus of opinion exists as to the possibility of predicting mental characters and cultural capacities from physical data.

The very prominence given to "race" and racial differences has forced the anthropologist to admit how little is really known about "race" and "racial purity"; the stability of racial characters, and above all, the correlation between the form of the human organism and cultural capacity.

The inevitable passing away of indigenous cultures under the influence of Western civilization has imposed upon anthropology the necessity of studying culture change, that is, the diffusion of Western culture among the primitive peoples. In Great Britain, organized initiative in this respect has been taken by the International Institute of African Languages and Cultures. In its journal, *Africa*, a series of articles especially devoted to the method of studying culture change has appeared (see vols. 8-9), following the first systematic outline by Dr. A. I. Richards (*Africa*, vol. 5, 1932), *Anthropological Problems in North-Eastern Rhodesia*. Dr. M. Hunter's *Reaction to Conquest*, 1936, is perhaps the first comprehensive study of the encroachment of European civilization on a primitive tribe. In America, work of this type has been pursued by Prof. Melville J. Herskovits, whose "The Significance of the Study of Acculturation for Anthropology" (*American Anthropologist*, 1937) and his statement on "Applied Anthropology" (*Science*, 1936), based largely on the work on negroes in the Old and New Worlds, expresses the American point of view. (B. MA.)

**Anti-Aircraft Weapons:** see MUNITIONS OF WAR: *Anti-Aircraft*.

**Anti-Lynching Legislation:** see LYNCHINGS.

**Antimony.** World production of antimony declined from a high of 33,800 metric tons in 1928 to a low of 18,500 tons in 1932; the general industrial recovery, supplemented by rearmament demand, brought the 1936 output back to about the 1928 level. During recent years China has supplied about 70% of the demand, Mexico 10%, and Bolivia 7%, the remaining 13% being scattered among 20 or more minor producers. The United States has no regular ore production, but several hundred tons annually are recovered as a by-product in the smelting of lead, and since 1931 an antimony smelter has been in operation in Texas, using Mexican and Bolivian ores. The output of this smelter exceeded 4,200 metric tons in 1936, and has been responsible for a considerable increase in the Mexican and Bolivian outputs, with a corresponding decrease in the imports of ore and metal from China. The United States is the largest consumer of antimony, taking about one-half of the world supply of new metal to satisfy two-thirds of its consumption demand, the other third being furnished by secondary metal recovered after previous use. The Chinese industry has been somewhat disorganized by the Sino-Japanese conflict, and though smelting operations continued at about the normal rate, shipments during the latter part of 1937 were irregular. (G. A. Ro.)

**Antioch College** continued, during 1937, its program as defined in the reorganized college plan of 1921. It continued the co-operative plan of alternate work and study, whereby students divide their time between college and a job; the broad required course program; the senior comprehensive examinations; the intra-mural athletic program; and the extensive advisory system. Combining these devices, which singly are all in use elsewhere, Antioch has worked out a distinctive pattern of education which seems to have considerable flexibility and merit. Friends of the college have been interested in the study of the required courses being made; health-study for freshmen; the research program, which in eight years has grown from \$500 to \$85,000 yearly; two courses in consumers' co-operatives; and the recognition of the college by the American Association of University Women. (A. D. HE.)

**Anti-Semitism.** There were few developments during 1937 affecting the position of Jews in Germany, and no new repressive measures of importance were undertaken, though there was little alleviation of their lot. On April 21, orders were issued for the suppression throughout the country of all lodges of the B'nai B'rith, the Jewish charitable and social organization; Rabbi Dr. Leo Baeck, president of the United Jewish lodges of Germany, and some 60 other persons connected with the lodges, had been arrested and questioned two days before; funds and documents were impounded, and the offices closed, while at the same time the secret police ordered that no meetings of Jewish associations, except the Kulturbund, should be held until June. The German-Polish Minorities Convention regarding Upper Silesia expiring on July 15, the Reich Government announced on July 3, that the anti-Jewish legislation would at once come into full force in that area, and a special law was passed providing for the retirement or dismissal of Jews in public employment there as from the end of August. In November, a Reich law was promulgated providing that persons deprived of German nationality should no longer be entitled to inherit from German subjects (even their husbands or parents), and that German citizens may deprive of their legal portion in their estate any descendant who has married a Jewish or non-Aryan person since the Nuremberg laws were promulgated in Sept. 1935.

Herr Förster, Nazi leader in Danzig, announced on Oct. 10 that the Jewish population of the Free City was to be reduced to the same condition as that of Germany, and thereafter picketing of Jewish shops, and some attacks on them, occurred, for which the National Socialist Party disclaimed responsibility. The executive committee of the World Jewish Congress wrote, at the beginning of November, to Great Britain, France, and Sweden, the Powers appointed by the Council of the League of Nations to watch the situation in Danzig, expressing indignation at the anti-Jewish measures taken there.

In Poland, Jews were for the first time publicly branded as racially "inferior" in April, by the announcement that no Jew was eligible for membership of the new National Totalitarian Party supported by M. Moscicki and Gen. Smigly-Rydz. On May 9, the Polish medical association barred Jews from membership, and the lawyers' association decided to limit the number of Jewish lawyers in the country to 10% of the total. On May 13, a serious pogrom occurred at Brest-Litovsk, lasting 15 hours, the 22,000 Jews in the city being left to the mercy of the mob. Many were injured, some fatally, thousands were ruined, and hundreds of Jewish-owned premises were damaged and looted. Towards the end of the year, measures discriminating against Jews were taken in the universities, numbered seats being introduced at Warsaw, and all non-Aryan students being segregated in a "bench ghetto." Once, Pilsudski's daughter, in protest, took her place among the



Jewish students. A boycott of Lwów high school was proclaimed by the Nationalists, as the rector refused to introduce a similar system there.

In Rumania, anti-Jewish measures were much intensified during the year. In May, the Federation of Rumanian Professional Associations, covering lawyers, university professors, doctors, pharmacists, engineers, teachers, and artists, decided to eliminate Jews, with other members of racial minorities, from those professions. At the end of December, after the formation of the National Christian Government, M. Goga, the premier, announced that Jews would be excluded from journalism and Government service and that the State would have no commercial dealings with enterprises with Jewish capital or personnel; at the same time three Jewish-owned newspapers of wide circulation, *Dimineata*, *Adeverul*, and *Lupta*, were suppressed. Except in Palestine (see ZIONISM), there have been no serious anti-Semitic activities in other countries. (See also JEWISH RELIGIOUS LIFE.)

## Apples.

Outstanding in world apple production in 1937 was the record crop of 86,000,000bu. in Germany, about 20 per cent larger than the previous highest production of 72,000,000bu. in 1934, and the 211,060,000-bu. crop of the United States, the highest yield since 1926. Canadian production was large, with a total for 1937 of 5,070,600bbl., as estimated by the Canadian Ministry of Trade and Commerce and compared to a 1936 crop of 4,115,200 barrels. Canadian production was divided as follows, with figures in parentheses being for 1936: Nova Scotia, 2,400,000bbl. (1,750,000); New Brunswick, 45,000bbl. (29,000); Quebec, 150,000bbl. (91,000); Ontario, 735,000bbl. (703,000); British Columbia, 5,220,300 boxes (4,625,100 boxes).

The United States crop of 211,060,000bu. compares with 117,506,000bu. for 1936 and a five-year (1928-32) average of 164,355,000 bushels. Production was above the average in all principal producing States except Maine, Colorado, Washington and Oregon. A larger percentage of the crop than usual was sold to canners and by-products plants because of low prices. It is estimated that Nova Scotia will export about 1,400,000bbl., and 300,000 cases of canned apples. In 1931 Nova Scotia exported 8,000 cases; preferential duties in the United Kingdom favour imports of Canadian apples over those of foreign countries and as a result the canning industry has greatly increased in Nova Scotia where cull apples brought about 80 cents a barrel, a substantially higher price than growers received in the United States, where culls and much of the crop were wasted because of low prices.

In Germany it is estimated about 21,000,000bu. of the 1937 crop will go to canners and processors. Since 1931 consumption of canned fruits and vegetables has increased 70 per cent. Although Germany has the largest crop in its history it will, because of treaty arrangements, import apples this year from Canada, New Zealand and Chile. The apple crops in England, France, Belgium, Italy, Denmark, Czechoslovakia and Hungary were lighter in 1937, the International Institute of Agriculture reported, but heavier in the Netherlands, Sweden, Yugoslavia, Bulgaria, Rumania and Austria. About half of Austria's import requirements, estimated at 185,000 to 230,000bu., will be supplied by Argentina under trade arrangements for industrial products in return.

For the last twenty-eight years the trend in apple imports has been generally upward in the United Kingdom. The five-year pre-War average (1909-13) was 7,441,000bu., and an average of 16,366,000bu. for the five years from 1929 to 1933. For the three years from 1934 to 1936 there was a small recession, the average being 14,600,000 bushels. During the past three years Canada has been the chief source of the United Kingdom's apple supply. The apple tree acreage in England was estimated by the Interna-

## APPLES—APPLIED PSYCHOLOGY

tional Institute of Agriculture in 1936 as 178,963 acres. In Wales, of 4,990ac. in fruit, 4,531ac. were in apples.

Since 1930 Japan has increased apple production and now has an annual crop of about 7,000,000 bushels. In 1937 Yugoslavia harvested its first apple crop from trees of grafted, American scions. Although naturally a small crop the quality is said to have been satisfactory, apparently settling a debated point as to whether American varieties could be grown successfully in Europe. The varieties grafted are chiefly winesap, Newtown and Delicious, and 300,000 trees similarly grafted are to come into bearing soon in Yugoslavia. (S. O. R.)

**Applied Chemistry:** see CHEMISTRY, APPLIED.

## Applied Psychology.

The outstanding psychological event in America during the year 1937 was a complete reorganization within the field of Applied Psychology. (1) The inauguration of the American Association for Applied Psychology was national in its objectives and outlook. Annual meetings for the reading of scientific papers, and the publication of an official journal were planned. *The Journal of Consulting Psychology*, previously published by the Association of Consulting Psychology, and with more local interests was taken over without change of name. The standards for membership were high and provided for two classes of members: Fellows, with the Ph.D. degree or its equivalent and four years of practice in the application of Psychology (or systematic published research of significant value), and Associates, with the Ph.D. or its equivalent and one year of practice. Four professional sections were established, namely, Clinical Psychology, Consulting Psychology, Educational Psychology, and Industrial and Business Psychology. Each section adopted its own standards of membership, which could in no case be lower than those of the parent organization. (2) State associations were established to be affiliated with the national organization and to be concerned with problems peculiar to individual States, such as legislation and employment problems. Thus New York State psychologists established the New York State Association of Applied Psychologists with membership requirements similar to those for the national body and with provision for an annual meeting for the presentation of scientific papers. Groups previously organized in other States were being transformed for affiliation with the national association. (3) Strictly local groups in cities were formed for dealing with all problems of local interest and for the discussion of scientific work at more frequent intervals than is possible through the medium of the larger units. A New York city unit was in process of organization.

It was reported that the Rumanian Government had established two psychological institutes, one for the purpose of applying psychology to economic life and the other for vocational guidance. Two additional institutes were said to be projected. (Institute psihotehnice, C. Radulescu—Motru, Psihotex, 1937, 1, 1-.)

**Aptitude Tests.**—The most comprehensive aptitude testing program undertaken since the close of the World War was in progress during the year 1937 as a part of the work of the Division of Standards and Research of the U.S. Public Employment Service. The plan envisaged a job analysis of thousands of occupations, a classification of these into groups according to the similarity of the human functions needed to succeed in them and the preparation and standardization of tests for aptitude in the performance of these functions. The procedure was expected to produce something in the nature of "occupational patterns" showing the characteristics that any given job calls for together with the standardized instruments which may be employed in detecting the presence of these characteristics in job applicants. The current concept of



aptitudes and the devices for their measurement were presented in *Aptitudes and Aptitude Testing* (W. V. Brigham, 1937).

**Motor Cars.**—The psychological problems involved in automobile driving were recognized and attacked in many countries particularly the United States, England, France, Germany, and Italy. Techniques were sought both for the detection of those who would be safe drivers, and especially for the early discovery of persons who would be prone to accidents. The U.S. Highway Research Board reported a study of 30,000 drivers, among whom less than 4% had 39% of the fatal accidents, 36% of the non-fatal personal accidents and 38% of the accidents in which no one was injured. (See "Highway Accidents," H. M. Johnson, *Science*, 1937, vol. 86, p. 14.) Concerning the causes of accident proneness there was difference of opinion. According to one view the key was to be found in "ability-capacity patterns" ("Fact and Fancy Regarding Driver Testing Procedure," A. Lauer, *Journal of Applied Psychol.* 1937, 21, 173- ); according to another it was primarily a matter of "emotional balance" or the presence of "nerves" as a result of which the driver loses his "presence of mind." ("Recherches Experimentales sur les Causes Psychologique des Accidents du Travail," J. M. Lahy, and S. Korngold, *C. R. 8th Internat. Conf. Psychotech.* 1935, 140- ); according to another it was a consequence of a general instability which might be detected by tests of attention and reaction time. ("Unfallaffinität im Verkehrswesen," G. Mayerhofer, *C. R. 8th Internat. Conf. Psychotech.* 1935, 256); according to still another it was a matter of temperament and personality ("Contributo alla psicologia degli infortuni automobilistici," H. Brugger, *Arch. Ital. Psicol.*, 1936, 14, 55- ).

**Aviation.**—The psychological factors in aviation were vigorously attacked during the year 1937. Besides the more routine attempts to detect potentially good aviators, the increased flying altitude raised the problem of the susceptibility of pilots and passengers to low oxygen atmospheres. These were studied during mountain climbing expeditions, during aeroplane flights and in laboratory chambers with artificially controlled atmospheres. Behaviour changes have been detected and measured both in the intellectual abilities and in temperament. It was found that individuals differ considerably in their power to withstand high altitudes. (See "Psycho-physiological Studies at High Altitude in the Andes," R. A. McFarland, *Journal of Comparative Psychol.*, 1937, 23.) Two trends were apparent in the tests for aviators, one suggested a "flying talent" comprising in part ability to orient oneself in three dimensions, which may be analyzed into various specialized sensory motor functions ("Functionale und charakterologische Fragen der Fliegereignung," P. Metz, *Zeitschrift für angewandte Psychol.* 1936, 153- ) and the other, more general personality factors among which extroversion was found to be a favourable indicator ("Value of Determining Reality Adjustment as a Means of Estimating Flying Aptitude," O. F. McIlney and W. F. Jensen, *Mental Hygiene*, 1937, 21, 101- ).

**Intelligence Tests.**—The Intelligence test continued to be the most widely used psychological test instrument and many problems of practical interest were attacked with it during the year. Important among these was the study of the relationship between size of family and the intelligence of the children in a typical English industrial city and in one "unspoilt rural area" in England. (*The Fight for our National Intelligence*, R. B. Cattell, 1937.) There appeared to be a distinct inverse relationship between the number of children in a family and their intelligence level. If it is assumed that 3.6 children per family are necessary to keep the population at a constant level, then only family groups with an I.Q. of .60 to .80 (with 3.6 or more children per family) have families large enough to perpetuate themselves. If

conditions were to remain unchanged there would be in the course of one generation, 30 years, an increase of 24% in mental deficiency and a decrease of 35% in the number of gifted children (those with I.Q. about 1.20). The inverse correlation between size of family and the intelligence of children was confirmed by Bradford (E. J. G. Bradford, "The Relation of Intelligence to Varying Birth-rate in Different Social Grades," *British Journ. of Educational Psychology*, 1937, 1, 229- ).

A revised edition of the Stanford-Binet Intelligence Test appeared after a lapse of 21 years since the publication of the widely used first edition. The new edition contained two equivalent forms, instead of the one form in the earlier edition. This was a much needed change. Each form contained 129 tests, while omissions were suggested for briefer testing. The tests were made more effective for the ages below six years, and certain changes have been adopted for computing the I.Q. for ages above thirteen years. (*Measuring Intelligence: A Guide to the Administration of the New Revised Stanford-Binet Tests of Intelligence*, L. M. Terman and M. A. Merrill, 1937.)

A psychological investigation which attained importance because of the number of persons affected by its findings concerned the use of blackboards in school work. The National Institute of Industrial Psychology (England) studied the effect upon the eyes of copying from a blackboard upon white paper. Such copying requires a child to shift rapidly and frequently between reflection surfaces whose values differ by as much as 75%. Various colours of surface and writing material were tested and the most efficient combination was found to be a yellow surface and blue chalk. Reading efficiency was increased by about 15%. The reduction in visual fatigue was not measured. The findings were so important that the research was being continued. ("An Experiment Showing the Superiority of a Light Colored Blackboard," W. D. Seymour, *British Journ. of Educ. Psychol.* 1937, 1, 259- ) (A. T. P.)

**Appropriations and Expenditures:** see GOVERNMENT EXPENDITURES.

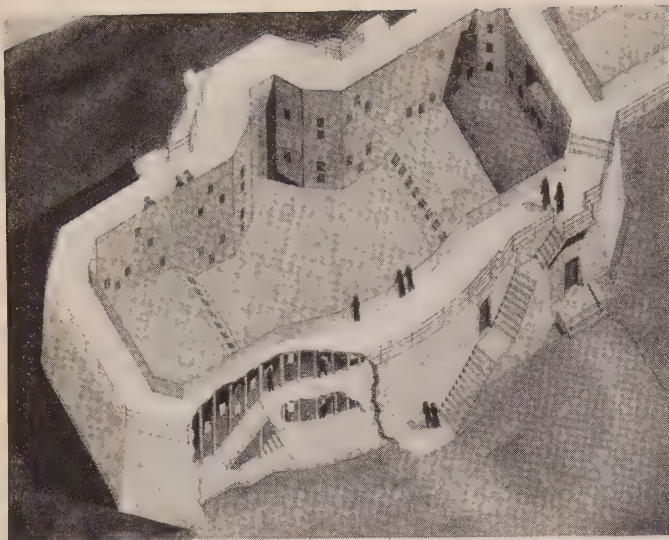
**Aptitude Tests:** see APPLIED PSYCHOLOGY: *Aptitude Tests*.

**Aquariums.** Undoubtedly the most ambitious design in aquarium construction saw ground broken in 1937 on the coast of Florida, U.S.A., sixteen miles south of St. Augustine. This undertaking, decidedly unorthodox as compared with any existing aquarium, entailed the construction of two im-



SKETCH OF AQUARIUM at Marineland, near St. Augustine, Fla., where larger specimens of sea life than any heretofore in captivity are now on exhibit





CONSTRUCTION DETAILS OF AQUARIUM with windows in the bottom and sides to facilitate study and motion pictures of ocean life

mense outdoor tanks of concrete. One is seventy-five feet in diameter and the other, rectangular, one hundred feet by forty feet. Visitors may view the exhibits from above as well as from windows in the walls. It is planned to display in these tanks much larger specimens of ocean life than any aquarium has heretofore attempted and the enclosures are to be as near like miniature oceans as it is possible to make them. The supply of suitable sea water is largely an engineering problem, albeit one of considerable magnitude. Plans include using the advantages of these large tanks for public exhibition, the taking of motion pictures and for scientific study. The project is to be self-supporting. The problem of capturing and handling the immense creatures contemplated, without damage, is considerable and the success of the project will depend to a considerable extent on the development of suitable methods.

Plans have been laid for the construction of a Government aquarium at Colombo, Ceylon. It is to include both marine and fresh-water displays and is to be operated in connection with a fisheries laboratory. A new municipal aquarium is under construction in Baltimore, Md., and the parts finished are already in operation. The official opening will be held in the early part of 1938. The chief attention is being devoted to fresh-water fishes. The oldest existing American aquarium suffered the loss of its long-time director through retirement. Dr. C. H. Townsend, Dean of American Aquarists, had led since 1902 the New York aquarium from a small start to its present important position and retired, to the day, after three and one-half decades of service. During his tenure of office 74,387,887 visitors viewed the displays. Plans are in various stages of development for public aquaria at Charleston, South Carolina, Raleigh, North Carolina, and at the Virgin Islands.

(C. M. Br.)

**Aqueducts** are designed to carry water for use as power, irrigation and supply for cities. In the United States alone, 69 dams exceeding 200ft. in height were completed or under construction in 1937.

Boulder dam on the Colorado river and 727ft. above bedrock, the highest in the world, was completed on March 1, 1936. The largest artificial lake, 115mi. long and 8mi. broad has been filling up and development of power, irrigation and water supply is proceeding. Grand Coulee dam, State of Washington, will have 2½ times as much concrete as Boulder dam and it is estimated that 2,700,000 horse-power will be developed. Bartlett dam on the

Verde river in Arizona is an example of the multiple arch type. Fort Peck dam on the Missouri river is an enormous embankment, nearly 4mi. long and intended to control flood waters. Its estimated cost is \$86,000,000. In March 1937, New York city began work on a project, estimated to cost \$273,000,000, by which additional water is to be carried from the sources of the Delaware river under the Hudson river by an 85mi. tunnel to the existing Croton and Kensico reservoirs. This scheme will increase the city's existing supply by 50% and is expected to provide for a population of 12,000,000. The Hetch-Hetchy aqueduct from San Joaquin Valley to San Francisco, Calif., will include two tunnels and a pipe line at an estimated cost of \$16,375,000. The capacity will be 200,000,000 gallons daily. Manchester, England, with surrounding urban areas, has derived much of her water from Thirlmere near Helvellyn, 96mi. distant. The city has been completing 84mi. of aqueducts and a dam by which Hawes Water becomes a reservoir and the remote village of Mardale, with its inn and church, is largely submerged. Moscow has a scheme for drawing water from the Volga through an 80mi. canal, raising her consumable supply from 140 pints per person per day to 275 pints—an average which, however, still falls below what is usual in more highly developed municipalities. (See also DAMS.)

**Arabia**, the general name of the vast peninsula (c. 1,100,000 sq.mi.), much of which is largely desert and still unexplored, bounded N. by Transjordan and Iraq, W. by the Red sea, S. by the Gulf of Aden and the Arabian sea, and E. by the Persian gulf and the Gulf of Oman. Nominally under the sovereignty of Turkey from the 16th century till the World War, it has since become divided into the kingdom of Saudi Arabia, the imamate of Yemen, the sultanates of Oman and Kuwait, and the British Crown Colony and Protectorate of Aden, and (in the Persian gulf) the British Protectorate of the Bahrein islands.

Of these, by far the most important is the kingdom of *Saudi Arabia*, formed in 1932 by the union of Hejaz and Nejd, with certain dependencies, and occupying under its king, Ibn Saud, about 800,000 sq.mi. with a mainly nomadic population of about 4,500,000 Arabs. The capital is Riyadh, in Nejd, almost in the centre of the peninsula. There are no great cities; Mecca, in the Hejaz, the largest, the birthplace of Mohammed and in consequence the great pilgrimage centre of all Islam, has some 70,000 inhabitants; Jeddah, the chief port, at which pilgrims for Mecca arrive, about 30,000; Medina, where the prophet died, about 20,000.

The people of the country are entirely Mohammedans, largely of the Wahhabi sect, of which the king is the head. There is no organized educational system, but some elementary teaching is given in connection with the mosques.

Dates, wheat, and barley are grown, and other fruits, but pasturage is more important than agriculture, camels and sheep being extensively raised, and horses exported to India and elsewhere.

The country's mineral wealth is almost entirely unexploited, though concessions for oil borings have been secured by foreign interests. Manufactures are practically non-existent. Transport is now very largely by motor-car; the roads are generally mere tracks, though a partly-metalled road connects Mecca with Jeddah. The Hejaz railway runs from Damascus in Syria to Medina, though the portion passing through Arabia is not at present in use; and pilgrims to Mecca travel from Jeddah largely by motor omnibus.

The unit of coinage, since 1936, is the riayl, agreeing in weight, size, and fineness with the Indian rupee, exchanging at par at the rate of 20 to the gold sovereign.

No statistics of state finances or of total trade are available. The exports from Saudi Arabia to the United Kingdom in 1935 were valued at c. £21,000 and the imports from the United Kingdom at c. £70,000. There are English and Dutch banks at Jeddah.



Ibn Saud is organizing a small regular army, but *ad hoc* levies are the ordinary defence forces. A few aircraft have been purchased.

*Yemen* is a kingdom (present ruler, the Imam Yahya Muhammad Hamid ed Din) in the south-west of the Arabian peninsula, south of Saudi Arabia and north of Aden, about 75,000 sq.mi. in area, with some 3½ million people. Its capital is San'a (population c. 40,000); other towns are Hodeida, the largest seaport (c. 50,000), Zabid, and Mocha, whose coffee is exported from Hodeida. The people, who are mainly Shiite Mohammedans, are largely engaged in growing coffee and cereals (wheat, millet, and barley).

*Oman*, a sultanate of about 80,000 sq.mi. at the south-east corner of Arabia, governed at present by Sultan Sayyid Said bin Taimur, is mainly a mountainous and unfertile tract (save for the Batinah coast, extending about 100mi. north-west of Muscat). Its population is about half a million, including many negroes. Muscat, the capital, with the town of Matrah, which adjoins it, has a population of some 13,000, and is a seaport of importance, on the mail route to India. Dates are grown and camels bred. Transport is by motor or pack animal. There is considerable trade with India, rice, coffee, and sugar being imported; dates, limes, and dried fish exported. In 1935-36 the imports were valued at c. £285,000 and the exports at c. £245,000.

The sultanate of *Kuwait* is a small state at the head of the Persian gulf, adjoining Iraq on the east and north. It is ruled at present by Sheikh Ahmed Ibn Jabir al Subah. The population, excluding nomads, is some 80,000. The capital and port of Kuwait (population c. 60,000) is a place of call for Imperial Airways liners, and an important depot for the gulf and Indian ocean carrying trade. Boats and dhows are built in the local shipyards. Exports in 1934-35 were valued at £80,000 and imports at £277,000.

On the south side of the bay at the south end of the Persian gulf are the territories of the six *Trucial Sheikhs* of Sharja, Abu Dhabi, Dhahi Ummel, Ras el-Khaimah, Qawein, and Ajman, along what was formerly called the Pirate Coast. The sheikhs are in close treaty relations with the British Government, through the political resident in the Persian gulf at Bushire. Their territories cover about 6,000 sq.mi., and have some 80,000 inhabitants. Pearls are exported to India.

The history of the Arab countries during 1937 has been mainly concerned with the Pan-Arab movement centred at Damascus, and supported by Italy. The Italian radio station at Bari was used during the year to disseminate anti-British propaganda by broadcasts in Arabic, and as a counter-move the British Broadcasting Co. began, in the new year, 1938, to broadcast programs in Arabic. At the Pan-Arab congress at Bloudan (Syria) in September, all the



Digging at LINDENMEIER SITE. Bones and artifacts occur along the bottom of dark layer seen in lower part of excavation

Arab states, except Yemen, were represented, and the president, Naji Survaiddi, former prime minister of Iraq, said that Arab support of Britain must depend on the latter's abandonment of Zionism, "a cancer in the body of the Arab countries which must be removed, otherwise it would cause the death of the body." Unless Britain agreed to this course, she could no longer count on Arab support in time of need, and the Arabs must seek a new alliance to protect their rights.

No generally acceptable scheme of Arab federation, however, has yet been mooted. In the late autumn overtures of friendship were made to the Yemen by Mussolini, who made a present of tanks and machine-guns to the king, the latter responding with a gift of Arab horses. (See also MEDITERRANEAN, THE.)

**Arbitration, International:** see PERMANENT COURT OF INTERNATIONAL JUSTICE.

**Archaeology.** Students of American archaeology seek to reconstruct the story of the development of the many native cultures of the New World by an examination and interpretation of the tangible remains which are found in the ruins, refuse heaps, and cemeteries. The evidence on which these studies depend consists of materials, conditions and relationships discovered through survey work and excavation in the field. These data are then studied and analyzed in museums and laboratories before the results of the research may be prepared for publication. During 1937, progress was made in these aspects of American archaeological research through the efforts of a host of individuals working under the auspices of a large number of organizations and institutions. The two countries in which the most archaeological activity exists are the United States and Mexico. Considerable work in this field is being carried forward in most of the Latin American countries, especially in Central America and in western South America. The majority of the institutions sponsoring work in American archaeology are located in the New World. However, a few European museums and scientific bodies contribute to the knowledge of the subject by the publication of the results of expeditions sent to the Arctic region, Mexico, Central America, and parts of South America.

One of the major problems of American archaeology is the de-



EXCAVATIONS revealing a broken table throne at Piedras Negras, Guatemala, by the expedition of the University Museum, University of Pennsylvania



termination of the antiquity of the human occupation of the New World, the distribution and routes of dispersal of these earliest Americans, and the kinds of cultures which they possessed. General interest in this fundamental question was greatly stimulated by the highly successful International Symposium on *Early Man* held in Philadelphia, Pa., on March 17 to 20, 1937. On this occasion, the Academy of Natural Sciences of Philadelphia, in celebration of the 125th anniversary of its founding, acted as host to geologists and anthropologists from all parts of the world while they reported upon and discussed the evidence relating to most ancient man on all the continents, including the Americas. Later in the year, a number of field parties secured evidence to be added to that obtained in previous years, indicating that ancient man had occupied sites in at least Colorado, New Mexico, and California. Harvard geologists established that the artifact level at the Lindenmeier site of a Folsom village near Fort Collins, Colo., was contemporaneous with the third phase of the Wisconsin glaciation, thereby strengthening the conclusion that man had already arrived in the New World at the time of the final stages of the last great glacial epoch.

The second major problem of American archaeology, namely, that of studying the growth of individual cultures in the New World, occupied the attention of most of the organizations interested in this subject. Limitations of space prevent even a brief description of the activities of the many field parties of 1937. The contributions which they have made to the problems of American archaeology will not be known until after the laboratory work has been completed and the results published. Nearly all parts of the New World witnessed the continued examination of archaeological sites. Several expeditions visited the Alaskan area. In the United States, the south-western area and the wooded section of the Mississippi Valley were the centres of active field work, as in former years. Archaeological expeditions worked also in California, along the Gulf Coast, on the Great Plains, in the Great Lakes area, and in many of the eastern States. Especial mention should be made of the increased field activities in the north-western States and in the New England area. While reports of the activities in the Latin American countries are not yet available to the writer, it may be safely assumed that archaeological field work was carried on, as in former years, in the more actively interested countries, especially Mexico, Peru, Brazil, and the Argentine Republic.

The United States government continued to support the field studies by the Bureau of American Ethnology at the Lindenmeier

site in Colorado, and sponsored work by the National Museum in Kansas. Under the auspices of other agencies, including the emergency administrations, this government assisted a number of other archaeological field projects, the most important of which were the continued survey of the basins to be flooded by the constructions of the Tennessee Valley Authority, and the further investigations of archaeological sites in the neighbourhood of Macon, Ga., at which the Ocmulgee National Monument was recently established. A part of these emergency funds was used to finance excavations by interested but untrained students, which increased the total available archaeological data, but undoubtedly caused the destruction of valuable additional information.

A number of the governments of Latin America have sponsored research in the archaeology within their borders. Among these, that of Mexico is most active in sponsoring an elaborate research program upon the remains of the ancient cultures in that country. In the area of the Maya civilization, field parties from the Carnegie Institution of Washington and the University of Pennsylvania Museum carried forward the long-time projects of these institutions, in co-operation with the governments of Mexico, Guatemala, and Honduras. It may be safely assumed that a number of the national museums in the South American countries continued their field investigations during the year.

During 1937, progress has been made in the museums and laboratories in arranging, analyzing, and interpreting the several varieties of archaeological data obtained through work in the field, bibliographic reference, and comparative studies with other museum collections. Improved techniques in the field have been reflected in the laboratories by a greater objectivity and a more critical analysis of the evidence. The majority of the laboratory work dealt with the studies upon archaeological cultures of individual sites or closely related ones in a small area. The increasing attention being given in the United States to laboratory problems is illustrated by the growing interest in the methods of ceramic technology, the inauguration of a project at the University of Chicago to study the application of tree-ring chronology to the eastern United States area, and the establishment at the Ohio State Museum of a Lithic Laboratory.

The year was also marked by the more clearly defined integration of interest among both professional and non-professional students of American archaeology. This was manifest not only in the type of articles appearing in the several journals, but also in the growing number of visits by archaeologists to the expeditions and laboratories of their colleagues in other institutions. It was demonstrated by the nature of the emphasis placed on archaeology at the inter-organizational group meetings such as the summer and winter meetings of the American Association for the Advancement of Science in Denver and Indianapolis respectively, the annual meeting of the American Anthropological Association, the spring meetings of its Central Section, and the annual meeting of the Eastern States Archaeological Federation. More or less informal conferences were held upon archaeological subjects during the course of the year, the most important of which was probably the Chaco conference held in New Mexico in August. That this integration has an international aspect is shown by the increasing awareness on the part of archaeologists in the United States of the problems and progress made by their colleagues in Latin America, particularly in Mexico. During the year, an Institute of Andean Research was organized to promote and foster anthropological research in the Andean region. A number of the members of the Executive Committee are United States students of American archaeology. The growing influence of the Society for American Archaeology, which is now in its third year, is at least in part responsible for this increasing integration of interest among professional archaeologists and the growing co-operation between



PALAEONTOLOGISTS begin a test pit in seeking traces of primitive man in the South-west



them and non-professional students of the subject.

The list of articles, reports, and books on American archaeology issued during 1937 was far too lengthy to permit adequate description in this brief article. The more significant publications included: *Early Man*, edited by G. G. MacCurdy, which is the report on the Philadelphia Symposium held last spring; *Archaeology of St. Lawrence Island, Alaska*, by Henry B. Collins, Jr., issued as one of the Smithsonian Miscellaneous Collections; *Rediscovering Illinois*, by Fay-Cooper Cole and Thorne Deuel, published by the University of Chicago; *Coclé*, by S. K. Lothrop, which appeared as one of the Memoirs of the Peabody Museum of American Archaeology and Ethnology of Harvard University.

(C. E. GU.)

**Eastern Hemisphere. Old Stone Age.**—The world-wide extension of exploration has shown that the culture sequence deduced from the stratigraphy of western Europe does not give an exhaustive or universally applicable summary of man's industrial development. In Lower Palaeolithic times, there existed, parallel to the Chellean and Acheulian cultures, typified by the *coup de poing* or hand-axe, also flake-cultures to which hand-axes were alien—the Clactonian, appearing already in Chellean times in western Europe, and the Levalloisian that is not demonstrably earlier than the Acheulian. But by the latter period the several cycles often interact. Still, even in the Middle Palaeolithic of western Europe, archaeologists distinguish (1) a pure Mousterian (simple flakes without hand-axes), (2) a Mousterian of Acheulian tradition, using hand-axes, and (3) a Mousterian using the Levallois technique. The Middle Palaeolithic cultures of Africa and Hither Asia seem all technically Levalloisian though the type tool is in form a Mousterian point. The same type tool also survives in an Upper Palaeolithic context in China and Siberia, and, in association with specialized variants, also in the Aterian of north Africa and in the Bambata and Still bay cultures of central and east Africa. (See brief summaries in Burkitt, *The Old Stone Age*; Leakey, *Adam's Ancestors* and *Stone Age Africa*.)

**Palestine.**—A culture sequence has been definitely established with Dr. Garrod's publication, in *The Stone Age of Mount Carmel* (1937), of the stratigraphy observed and materials collected in three caves in the Wady Mughareh. The succession reported is (from the base up) as follows: (1) a crude flake industry equivalent typologically and stratigraphically to the Tayacian of La Micoque in the Dordogne; (2) a very rich Upper Acheulian, interrupted by a thin layer containing blade tools of Upper Palaeolithic aspect; (3) deep Levallois-Mousterian layers yielding remains of 12 human skeletons; (4) a Lower Aurignacian; (5) two or three stages of a culture typologically ancestral or equivalent to the French Middle Aurignacian; (6) the mesolithic Natufian.

**South Africa.**—In the same year, Dr. van Riet Lowe geologically fixed the development of the hand-axe cultures in "The Geology and Archaeology of the Vaal River Basin" (*Geological Survey Memoir*, 35). Pebbles flaked into tools—the African pre-Chellean—go back to a dry epoch preceding the "first wet phase." The latter then witnessed the development of the African Chellean, and three phases of African Acheulian characterized throughout by hand-axes and cleavers which are often made from flakes and, from African Acheulian II on, from flakes struck from Victoria West cores, prepared by a sort of Proto-Levalloisian technique. In a second wet phase the same cycle, but now blended with the Levalloisian, reappears as the Fauresmith culture, equivalent to Leakey's Nanyukian in central Africa. The Memoir admits that Africa as a whole during Lower Palaeolithic times formed a province of the hand-axe cultures. These embraced India, too, extending as far north as the Punjab by the Second Interglacial, and even reached Java, but have not yet been reported in Upper Asia. (See *Early Man*, p.257; *Bull. Raffles Museum*, Ser. B, 1936, 57;



SEARCHING FOR THE FIRST AMERICAN in fossil beds near Clovis, New Mexico

*Proc. Amer. Philos. Soc.*, 77 (1937), 290-308.)

Fossil Men of Lower Palaeolithic age have become relatively well known since 1928, no fewer than four new specimens being reported during 1937. Three additional skulls of the genus *Sinanthropus*, from the caves of Chou-kou-tien, near Peking (where the genus was first discovered in 1926), were announced in *Nature* on February 13, and the first reconstruction of a complete *Sinanthropus* skull was published there on December 11. In the *Illustrated London News* of December 11, von Koenigswald described from Central Java a new skull of the genus *Pithecanthropus*, more perfect than the famous skull-cap discovered by Dubois in 1891, but derived from the same Middle Pleistocene horizon. An infantile skull, discovered in 1936 with an Early Pleistocene fauna at Modjokerto, is now thought to belong to the same genus. Neither *Sinanthropus* nor *Pithecanthropus* demonstrably made hand-axes. Both are exceedingly ape-like, with a continuous bony ridge (supra-orbital torus) above the eyes, a retreating forehead, a low skull, and a chinless lower jaw equipped with a "simian palate" on the inner side. The cranial capacity of the new *Pithecanthropus* is only 750c.c. (150c.c. less than that of Dubois' skull); that of *Sinanthropus* varies in the new skulls from 1,050c.c. to 1,200c.c. Weidenreich opined (*J.R.A.I.*, 1937, 51-66) that *Sinanthropus* was more primitive than *Pithecanthropus*, but might be ancestral to *Javanthropus*, another archaic hominid found during 1934 in the Late Pleistocene deposits of the Solo river, east Java. Antler axes and harpoons, comparable to the Lyngby and Azilian types of mesolithic Europe, were found at the same horizon. Of all the skeletons of Lower Palaeolithic age so far discovered, none unambiguously represents the authors of the hand-axe cultures, nor yet is universally accepted as being on the direct line of ascent to modern man. But the Middle Palaeolithic population of the Mount Carmel caves comprised individuals that combined in a single skeleton peculiarities found in the Neanderthals who created the Mousterian culture of western Europe with others distinctive of modern men—for instance, a supra-orbital torus and a good chin (*Early Man*, 41-53; 349-60).

**Upper Palaeolithic.**—In this phase, too, archaeologists today recognize, instead of a single evolutionary series, a multiplicity of distinct contemporary cultures. So in east central Europe and Russia a series of cultures ran parallel to the Aurignacian, Solutrean, and Magdalenian of France. Their decorative art was not naturalistic, but employed geometric patterns, notably the maeander (at Mezin in the Ukraine) and the spiral (at Malta in Siberia), but for magico-religious rites female figurines were carved in ivory. Their faces are generally left featureless, but in



the *Illustrated London News* of Oct. 2, 1937, Absolon published a fine palaeolithic "portrait head"—a tiny carving of mammoth-ivory from Vestonice, in Moravia, apparently contemporary with the western Upper Aurignacian.

**Mesolithic.**—The first appearance of man on the frozen plains of northern Europe has been put back to Late Magdalenian times by Rust's publication in 1937 of his excavations at Meiendorf and Stellmoor, north of Hamburg. While the plain was still open tundra, reindeer hunters used to camp on it between June and September beside small meres.

On the camping-places only flint-blade tools survive, but the peat and mud of the adjacent meres have preserved tools in all stages of manufacture out of reindeer antler, antler harpoons, arrow-heads, and knife-handles with flint-blade still in place and the skeletons of whole reindeer that had been cast into the waters, weighted with stones, as sacrifices. These reindeer were more closely allied to the American and east Asiatic species (*Rangifer arcticus*) than to the modern European reindeer (*R. tarandus*). Their hunters were but temporary visitants to these far-northern tundras, having their winter quarters probably in southern Germany.

Another encampment at Stellmoor, however, dates from a very much later time, when pinewoods had already invaded the tundra, though reindeer were still the chief game in north Germany. The reindeer were hunted by men of the Ahrensburg-Lyngby culture with arrows the wooden shafts of which as well as their asymmetrical tanged flint points have been preserved in the peat. Beside the mere, the hunters set up a reindeer's skull on a stout post—a sort of totem pole. And they were equipped with a sort of axe of reindeer antler, a first attempt at mastering the forests that in mesolithic times replaced the tundras and steppes to which palaeolithic hunters had been accustomed in Europe. The Ahrensburg culture is thus the oldest representative of the great cycle of what have been termed Forest Cultures. All these are distinguished, both from the earlier palaeolithic cultures and from the contemporary Azilian and Tardenoisian, by the possession of axe-like tools for dealing with timber. The Maglemosean of Denmark is only one facies of this complex, other aspects of which are seen east of the Baltic at Kunda and again to the west in south-eastern England.

Thanks to the modern technique of pollen analysis, the several phases in the evolution of these mesolithic cultures can now be correlated with changes in the composition of the north European forest and of the climatic régime that conditioned them. (See Clark, *The Mesolithic Settlement of Northern Europe*, 1936; Childe in *Early Man*, 1937, 233-42; Rust, *Das altsteinzeitliche Rentier-jägerlager Meiendorf*, 1937; "Die Grabungen bei Hof Stellmoor," in *Ofa*, i, 1936.)

**Neolithic.**—A neolithic economy controlling its own food-supply by agriculture and stockbreeding could not evolve spontaneously in mesolithic Europe; the cereals and domestic animals upon which it was based must have been introduced from Hither Asia or north Africa. And, in fact, systematic excavations during the last 10 years have amply demonstrated the hoary antiquity of the new way of life in Hither Asia. In the Natufian of Palestine, that lacks axes and pottery and is classed as mesolithic on account of its microlithic flint work, sickle teeth, mounted in bone handles, suggest that wheat or barley was already being cultivated. At Jericho the debris of "neolithic" settlements had formed an accumulation seven or eight metres thick before the local "Bronze Age" began about 3000 B.C. The high antiquity of food-production is even more dramatically demonstrated in Mesopotamia, at Erech and Nineveh, where the ruins of successive farming villages and townships had produced mounds 20 to 25 metres high before 3000 B.C.



ORIENTAL INSTITUTE WORKMEN clearing the north front of the Apadana or royal audience hall of Darius and Xerxes at Persepolis, Iran

The earliest neolithic of the Orient may indeed be as much older than the classical neolithic of Britain or Switzerland as the latter is than the neolithic culture of New Zealand in A.D. 1800. (See Childe, *New Light on the Most Ancient East*, 1936, and, for Jericho, *Liverpool Annals of Arch. and Anthr.*, xxii-xxiii.)

The British neolithic culture represented in "camps" girt with ditches interrupted by frequent causeways and by burials under long barrows is now seen to be one branch of a great western cycle to which the earliest Swiss lake-dwellings also belong. It is characterized throughout by leathery pots that suggest a north African origin for the civilization since very similar pots were current in the neolithic village of Merimde, north of Cairo, on the western edge of the Nile delta.

In 1937, a long barrow, the sepulture distinctive of neolithic Britain, has for the first time been found in a definite relation to a neolithic causewayed camp, during the fourth season's excavations at Maiden castle, near Dorchester. The barrow, of the unprecedented length of 1,760ft., cuts across, and is therefore later than, the ditch of the original neolithic camp. Still the pottery from the bottom of the barrow's ditches is still purely neolithic, so that the monument was presumably erected before the "Bronze Age" Beaker-folk reached Dorset. These observations perhaps tend to enhance the probability that neolithic farmers first reached Britain as a result of a slow landwise trek across France rather before the diffusion of megalithic tombs by maritime intercourse along the Atlantic coasts.

**Megalithic Tombs.**—In *Antiquity*, 1937, 185, Daniel reminds us that the varieties designated respectively "dolmens," "passage



graves," and "long stone cists" (better "gallery graves") cannot be used as indicative of successive periods of time except in Denmark and Sweden, and even there do not evolve one out of the other without external stimuli. The several types of megalithic burial chambers may embody distinct traditions, but are often contemporary.

While in Scandinavia megalithic tombs are products of a neolithic population, their builders in Mediterranean lands were generally, if not in all cases, using metal tools, presumably because the knowledge of metallurgy spread slowly from the south northwards. To call a megalithic tomb neolithic or bronze age need not imply anything about its absolute antiquity.

**Bronze Age.**—The arts of metal-working were discovered east of the Mediterranean, and systematically applied first in the cities of Mesopotamia and the Indus valley and then also in Egypt. In Mesopotamia and India tin-bronze was in use at least as early as 2800 B.C. By this date society in Egypt, Mesopotamia, and India was already organized in cities, wherein secondary industry, trade, and public employment could absorb the surplus of a prolific agricultural population. The urban industries' need for imported raw materials (including metals) was a main factor in diffusing the science of metallurgy among surrounding barbarians. The routes whereby Mesopotamian technical skill was transmitted westward have been defined during 1937 by discoveries in Syria and Turkey.

**Mari,** on the Middle Euphrates (just west of the Syrian-Iraqi frontier), was an outpost of Mesopotamian urban civilization before 3000 B.C. Three large tombs, rather older than 3000 B.C., were announced last year. They are stone-built chambers roofed by corbelling, and thus anticipating Early Aegean funerary architecture. In one a human victim has been slain by pins stuck into his throat.

A later palace at the same site, built about 1900 B.C., was adorned with fresco paintings, the earliest yet found in Mesopotamia. The naturalism of some scenes and certain motives employed suggest influence from Crete, perhaps even the employment of Minoan artists.

Farther west, in the Orontes valley, the interaction of Aegean and Mesopotamian civilizations about 1650 B.C. is illustrated by Minoan patterns on the local pottery of Tal Atchana. (See *Syria*, 1937, 80, and 234; *Archiv. f. Orientforschung*, 1937, 86; *Illustrated London News*, Oct. 30, 1937; *J. Hellenic Studies*, lvi (1936), 130-4.)



VIEW OF THE EXCAVATIONS of the Megiddo Expedition of the Oriental Institute, University of Chicago, at the Mound of Armageddon, which in 1937 revealed the most spectacular gold and ivory treasures ever found in Palestine

**Anatolia.**—Since 1929, excavations at Kusura, near Afyon Kara Hissar, and Ahlatlibel, near Ankara, have confirmed the belief that knowledge of metallurgy was transmitted to Troy (Hissarlik), on the Dardanelles, partly across the plateau of Asia Minor. By the third millennium B.C., these sites were little townships, where metal was used side by side with stone tools and worked into forms already familiar from Troy and central Europe; their civilization was in general most closely allied to that of Troy. But a true estimate of the technical level attained has been made possible only last year through the publication of the Turkish Historical Society's discoveries at Alaca Hüyük in the Halys basin, where a series of rich "royal tombs" came to light. Vessels of copper, gold or silver, illustrate shapes—beaked jugs, cups, and keeled bowls—already familiar in clay from Ahlatlibel and Troy. A spear-head with hooked tang and a copper "frying-pan" suggest connections with Early Cycladic culture in the Aegean; numerous hammer-headed pins prove contact with the Kuban culture of south Russia. Art is illustrated by rather stiff figures of stags and human beings in copper or silver, and much handsome openwork in gold or copper, on which the swastika sometimes appears. Despite the technical excellence of jewellery and metal-work—even iron was used for ornaments—the Anatolian civilization revealed by the tombs remains essentially barbaric without writing or even seals. (See *Türk Tarih arkeologiya ve Etnografya, Dergisi*, ii, 3-90; *Türk Tarih Kurumu, Belleten*, i-ii (1937); *Archaeologia*, 86, 1-60.)

**North-western Europe.**—Metallurgical knowledge was transmitted both by sea-ways along the Mediterranean and Atlantic coasts (in the wake of megalithic tombs) and by land up the Danube valley. In 1937 Childe (*American Anthropologist*, 39, 1-22) and Oriordain (*Archaeologia*, 86, 195-315) emphasized the advantage conferred on the British Isles by the possession of both copper and tin and the consequent high relative antiquity and predominant influence of Britannico-Hibernian metallurgy in the early bronze age of northern and western Europe. Denmark and north Germany were still in a neolithic stage of culture, while the British Isles were in full mastery of bronze. This British bronze age, inspired by sea-borne commerce, began at least as early as the central European Aunjetitz bronze age that is rooted in Anatolia. Hence the Beaker-folk, who invaded Great Britain from the Continent in at least two distinct waves, did not introduce the arts of metallurgy, though they may have been the first British customers of the Irish-Cornish metal-workers.

**Iron Age.**—Excavations in Germany have suggested that vitrification was there produced by the ignition of ramparts constructed, after the manner of Gallic walls, described by Julius Caesar, of two parallel facing walls of dry masonry tied together by transverse beams and containing a core of rubble and timbers. To determine whether this account would apply to Scotland, model Gallic walls were built at Plean and at Rahoy in 1937. The walls were successfully ignited by fires kindled against them, and burned for five and twelve hours respectively. On cooling, the characteristic phenomena of vitrification were observed in the cores of both walls. In the same year excavation proved that the vitrified fort at Rahoy was contemporary with a Gallic walled fort at Abernethy (about 200 B.C.). Since Gallic forts were being erected in Scotland as early as any vitrified forts, and since the conflagration of their ramparts would produce vitrification, this effect need not have been designed by their builders.

(V. G. C.)

**Archery.** Of international significance was the Seventh Annual Championship Tournament of the International Archery Federation which was held in Paris, France, the first week of August, to determine the archery championships of the world.



Representatives from England, Poland, France, Belgium, Sweden, Czechoslovakia, Norway, Finland, Switzerland, and United States took part in this event. The men's championship was won by Monsieur De Rons of Belgium and the ladies' championship by Mrs. Simon of England.

The most important archery event in the United States during 1937 was the 57th Annual Championship Tournament of the National Archery Association held at Lancaster, Pa., July 19-23, with 178 archers participating. The winners and their scores were: men's championship, Russ Hoogerhyde, Northbrook, Ill., Double York 268-1496, Double American 179-1369; ladies' championship, Miss Jean A. Tenney, Clear Spring, Md., Double National 141-859, Double Columbia 143-1097; junior champions, Robert Goldrich, Newtonville, Mass., Double Junior American 180-1286 (a new record) and Marian Sturm, Indianapolis, Ind. A record shot of 355yds. was made by Mrs. Millie Hill, Dayton, Ohio, in the Ladies' Flight Shoot.

Over 700 students from 72 colleges took part in the Eighth Annual Women's Inter-Collegiate contest which was won by the first team from Los Angeles Junior College, Los Angeles, Calif.

During 1937 a hunting preserve for the exclusive use of archers hunting with the bow and arrow was set aside in Pennsylvania. Similar hunting preserves also exist in Ohio, Indiana and Oregon. Of the 300 or more archery clubs in the United States about 200 are using ranges provided by municipalities on public recreational fields. (L. C. S.)

**Architects, American Institute of:** see AMERICAN INSTITUTE OF ARCHITECTS.

**Architecture.** The critical observer studying the architecture of Europe and the Americas as evidenced by the buildings which were finished in 1937, will note certain things:—many new materials, especially in interiors; some new methods of construction, especially in prefabrication; remarkable simplicity in form; little use of ornament, but the decorative employment of strong contrasting colours both on façades and interiors; brilliant, rustless metals; extensive use of glass in a great variety of forms; and all of these elements combined into strange shapes and masses which, when compared with the older surrounding buildings, would indicate either a revolution in architectural thinking or an evolution which has come over us so rapidly that it amounts to the same thing.

Several factors are responsible for this apparently rapid change. Not the least of these is the fact that the total amount of building in the last ten years has been relatively small, compared to the preceding decade. The new buildings are, therefore, conspicuous because of their apparent isolation.

**Materials.**—Strictly speaking, no new idea has appeared in construction which is fundamental, but standardization of parts made by machine on a mass production basis is becoming daily an increasingly important factor in architectural design. For instance, in the construction of Rockefeller Center in New York, a single contract for 28,000 identical windows was given out. It is also a result of this machine age that there appear to be many new and, for the moment, novel materials available for building use. These have often been called, for lack of a broader term, "synthetic" materials, meaning those made by machinery, chemistry or metallurgy rather than carved or shaped out of nature's products. Making building substances is not a new idea, but so many substances are being put on the market at present, and at such a rapid rate, that they seem to be new materials. We do not think of brick—a product which has been in use since the days of the Egyptians—as a "synthetic" material, yet it is "made" by artificially baking clay. But the public as well as architects are not

accustomed to the idea of developing materials to specification so that there are some mental adjustments to make, and architects need to acquire a great deal of technical knowledge in order to use "synthetic" materials properly and develop efficient building techniques for handling them.

Important among these recently developed materials are plastics, the chemically developed resinous substances impervious to moisture, remarkably rigid, offering a wide range of colour, and surface textures grading all the way from a highly polished mirror surface to moulded forms of wide variety.

Another material, glass, although familiar as it has been used in the arts for centuries and as it is constantly used now for windows, tableware and mirrors, is a new building material in the forms which adapt it for use as a wall surface. Formed in the shape of brick or of rectangular panels, varying in thickness from an inch to several inches, it is used in combination with metal bracing for interior partition work where it is necessary to prevent sound passing from space to space, yet where the passage of light is desired. It is also being used in thick blocks for exterior walls, serving in this case as the very structure itself. It is completely non-absorbent, highly resistant to heat and cold, very sanitary since it can be kept clean easily, and, when used on exteriors in smoky cities, seems to wash itself. Sometimes it is used in a translucent form to admit light to the interior; sometimes in an opaque form simply as an exterior wall.

Special metal alloys are coming into increasing use, typically the rustless metals. These are industrially produced alloys as distinguished from the metals to which we are more accustomed such as iron, steel, copper, etc., and, unlike them, are able to maintain their lustre and original colour without deterioration. All such alloys are beginning to play an important rôle both structurally and ornamentally. Finally, the older materials themselves—stone, marble, wood, terra cotta, brick—are being used differently since the designer must consider machine production rather than hand production as a basis of his ornamentation.

In the structural field, there have been technical improvements in methods of assembling the steel skeleton which is now almost universally adopted as the weight bearing structure of the larger buildings. Assembly by riveting—a process which always annoys the whole neighbourhood with the racket made by the pneumatic riveter—is now being replaced by electric welding with no more noise than the low hum of the motor that generates the current.

Methods of utilizing concrete for floors, roofs, and walls have also been improved. Concrete is being manufactured in large interlocking slabs, the necessary drying out having been done in the factory under perfectly controllable conditions. By using such slabs, floors, roofs and walls are erected much more quickly and easily and without the subsequent loss of time for drying out that follows the customary usage of concrete.

**"Functionalism."**—Previous to the World War, there had been growing up in Europe, notably in Germany, Austria and the Scandinavian countries, a new school of architecture. A younger group was reluctant to accept the academic standards to which contemporary architecture was expected to conform. It therefore submitted these architectural conventions to a careful scrutiny, and compared them with structural requirements as understood by the engineers and contractors. The fact thus came to light, that structural requirements, *i.e.* "functional" plan, more often conflicted than harmonized with the "architectural" design of a building. With simple good sense, therefore, these architects, perceiving additionally, that one reason for this state of affairs was the rapid progress which science had enabled engineering to make, proceeded to put the "horse before the cart" at least long enough to find out what kind of architectural thinking was appropriate to scientific engineering. The interesting period of "functionalism"





Upper left—NEWEST EUROPEAN RAILWAY STATION, at Florence, Italy, impressively adapts simplicity of design to the spaciousness of a public building

Upper right—ST. MONICA'S CHURCH at Bootle, near Liverpool, England

Lower left—FLAT BUILDING at Highgate, Highpoint, London, designed for a maximum of sunlight and air and full recreational use of roof space

Lower right—HALL IN ROCKEFELLER CENTER, New York city, where architectural details emphasize the commercial purposes of the building





has much solid accomplishment to its credit, whatever the somewhat emotional controversies it inadvertently caused.

The year 1937 shows by many examples that "modern" architecture has been accepted by the public. Just how well established it actually is, and to what degree it is indicative of a trend which will be realized in the buildings of the future, remains a question. Change itself seems to be occurring much more rapidly in all phases of life so that still other and different approaches to the architectural problem may develop in this next decade. The following discussion of examples illustrates this point.

**Paris Exposition.**—With a few exceptions, the exhibits of the Paris Exposition of 1937 present a representative cross-section of national trends in architecture, because there are over 40 national buildings included as exhibits. The most impressive though by no means the most admirable specimens are those of Germany and Russia. It is interesting to note that both buildings—antagonistic though their Governments are and different as their architectural plans at first glance appear to be—achieve an almost identical effect of aggressive, massive force. Doubtless this is, partially at least, the effect desired by both, and it results from taking similar liberties with scale and other design relations. The German building adapts classic modes to its own ends. The Russian building is a streamlined pedestal for an out-size statue of two workers. The most sympathetic critic who has any understanding of architecture is forced to conclude that however beneficial heavy handed Government may be for the public soul, it is demoralizing to public architecture. The buildings are not modern, unless simply taking liberties with previously accepted concepts is enough to "modernize" them.

There is a certain confusion between modern and modernized apparent throughout the exposition. It is particularly obvious in exhibits such as those of Rumania and Hungary where the buildings are really romantic in character, true enough to the mediaevalism that is typical of their historic architecture, but sterilized as to detail in the manner that is associated with modern work. As a way of being modern, these exhibits differ from those of Germany and Russia by a successful willingness to be pleasant, and there is no justification for believing that this particular phase of contemporary architecture is less significant—as far as indicating the trend of the future—than the more radical phases. The emotional connotations of a mode of architecture are a vital—if not the most vital—factor in determining its acceptance at a given time.

There are two buildings that fully merit credit as fine design, and which are genuine examples of the modern approach in architectural thinking. These are the Austrian exhibit and that of Yugoslavia. The Austrian building is thoroughly competent and possesses the same quality of distinction as the work of the American architects McKim, Mead and White—probably for the same reason, *i.e.* a theory clearly conceived and a thorough knowledge of all the materials used, including those that are simply architectural ideas.

The Yugoslavian building likewise arrests attention by the quietness and sureness of its claim. A simplicity which includes both charm and "good taste" becomes almost dramatic situated as it is in a gathering of buildings which are on the whole restless and aggressive.

Of equal interest are the permanent buildings, the Trocadero and the Palace of Modern Art. The Trocadero is classic in its proportions, the orderly sequence of motives used and its symmetry on a broad scale, but it is classic with none of the usual details formerly associated with this style. In the case of the Palace of Modern Art, regard for perfect balance is not stressed to such a degree. There is unusual freedom in the plan arrangement with an interesting play of changing levels as one passes

from terrace to terrace in the forecourt of the building, then as one moves from gallery to gallery in the interior.

It is to be assumed that the crudity noted in some of the national exhibits is a perfectly normal symptom of a confused but earnest effort to adjust architectural thinking to rapidly changing social conditions, and that irrelevant inconsistencies will be eliminated and details more carefully studied as the mode develops. The buildings of Finland, Sweden, Great Britain, Czechoslovakia, Canada, Denmark and the United States all are typical of various aspects of the modern trend, and are sufficiently rational experiments. Finland, using corrugated iron vertically as a decorative surface, indicates the possibilities inherent in materials once they are considered objectively, apart from the ideas which have become attached to them. Sweden raises the question as to how necessary it may be to conceal construction members. Czechoslovakia gives a simple but convincing use of glass walls and, like Portugal, manages to do so in terms of pleasing and well integrated detail relationships. Great Britain and the United States, without in either case achieving a design of great distinction, are important for indicating quantitatively the radical ideas activating the whole movement.

Whatever the quality of the design displayed there, the Paris exposition makes it clear that the functional concept has been accepted in principle by the exhibiting countries, and the variations are due partly to national differences in politics, history and temperament, partly to the fact that modern building to date has perforce been primarily experimental. Time is needed to prove which have been the most practical and acceptable ways of solving various architectural problems.

Among the interesting private developments of 1937 are the apartments at Highgate, London. These do more than demonstrate functionalism in plan, construction and character of design. By meticulous attention to details, they make a very subtle and convincing demonstration of the degree to which the modern school of thought has become established. The fact that the potentialities of modern technics are utilized not merely to effect economies, but to realize, by conscious exactness a self-consistent precision in design, is evidence of that intelligent study and apt utilization of the machine which will find and express the particular form of beauty intrinsic to it. The Highpoint apartments are, therefore, not only a conscientious and very successful solution of a particularly difficult variety of architectural problem, but a challenge, as well, to those who regard modern design as a superficial style.

It is interesting, as a matter of comparison, to consider the Rockefeller apartments in New York city, which are roughly equivalent in intention, and also the Williamsburg housing project in Brooklyn, New York. The interiors and floor plans of the former are noteworthy for their attractive simplicity. (*See HOUSING.*)

A different type of problem and one in which design is less limited by economic considerations, is solved most admirably in the Florence railway station, Italy. While strictly functional in plan, construction and concept, the very nature of the problem permits a monumentalism of which the architects have taken full advantage. Although subjected to criticism by those whose usual ways of thinking about architecture have been jarred, the point of great significance about this particular edifice is the fact that it is a true continuum of the grand manner typical of Italian architecture.

It is unmistakably Italian in spirit, unmistakably the modern architectural equivalent of a Renaissance palace.

In the same way Rockefeller Center, to which a new unit was added in 1937, is typical of what is most characteristically American in architecture.

(H. W. C.)



**Arctic Exploration.** The most notable achievements of 1937 have resulted from that general Soviet program of northward expansion which in 1932 was consolidated as the Chief Administration of the Northern Sea Route, which under Professor Otto Yulievich Schmidt, dominates all Soviet lands and seas north of  $56^{\circ}\text{N. Lat.}$  During 1937 they have reached a total of 57 in their arctic scientific stations, some of which have staffs comparable to the faculty of a small college, with a wide research schedule, while others are largely confined to the observation and wireless reporting of weather conditions and ice movement. The scientific and developmental program of which these stations are a visible sign is developing in many directions.

In 1932, for the first time a vessel, the "Sibiriakov," negotiated the entire North-east passage in one navigation season. In 1935, 100 vessels traversed parts of the route, carrying 204,000 tons of freight, while four freighters completed the passage; in 1936, 160 ships carried cargo along portions of the route, and fourteen vessels made through runs. Figures for 1937 are not yet available. (Jan. 1, 1938.)

Two countries are most notable in their use of planes beyond the arctic circle, Canada and the Soviet Union. A Canadian estimate is that some thirty aeroplanes flew within the Canadian arctic during the year. A Soviet authority has it that about 300 aeroplanes were constantly employed within their arctic. Ten regular airlines were in operation, with a mileage of nearly 7,500 miles. The Soviets have numerous air bases within the arctic, most of them on the mainland but three or more on islands to the north of Siberia. The most northerly is at Rudolf island, near  $81^{\circ}50'\text{N. Lat.}, 58^{\circ}\text{E. Long.}$

**Polar Landings.**—After a reconnoitering flight to the North Pole on May 5 by Pavel Golovin, a landing at the Pole was made on May 21 by a four-engined plane. In command was Professor Schmidt, the pilot was Mikhail V. Vodopyanov, and there were three others. They came from Rudolf island, which they had reached by aeroplane. On radio report that they had landed safely, three other four-engined planes arrived with supplies. In the operation at least nine successful descents and take-offs at different points were made. The planes returned to Moscow leaving encamped on a stout floe Ivan Papanin, leader, Ernest Krenkel, Pyotr Shirshov and Eugene Feodorov. The camp has drifted at an average rate of more than three miles per day towards the Atlantic, and on Dec. 31, 1937 they had reached  $\text{Lat. } 80^{\circ}0'\text{N.}, \text{Long. } 6^{\circ}59'\text{W.}$  The direction of drift was expected but the rate has exceeded most predictions. The sounding taken near the North Pole of 4,290 metres (14,070ft.) is in conformity with Peary's no bottom of 9,000ft., taken also near the Pole in 1909. The weather report included summer rains. A fundamental oceanographic controversy appears to be settled by Papanin's radio dispatch of July 3, 1937: "... the investigations ... have disproved Nansen's conjecture that the central part of the Arctic ocean holds extremely little life. A net raised from a depth of 1,000 metres fairly teemed with diverse molluscs, larvae, medusae, and crustacea."

Other dispatches have mentioned, while still right by the North Pole, visits by seven kinds of birds and by a mother polar bear with her two cubs. In the leads were crustaceans moving near the surface and seals swimming about and gulping them down.

After the world was startled by the news that Soviet arctic scientific station No. 56 had been established at the North Pole, came a similar announcement that station No. 57 had been established on Henrietta island. This had been discovered by the American George W. De Long in 1881, and is particularly important for predicting the weather of the American territory of Alaska, as is also Wrangel island (discovered by Captain Henry

Kellett of the British Navy in 1849). The Soviet Government now maintains scientific stations on every group of their Arctic islands, and colonies with schools and hospitals on some of them.

In trans-Arctic flying, and in long distance flying by way of the Arctic, there were three notable Soviet endeavours. Between June 17 and 20 Valeri Chkalov, Georgi Baidukov and Alexander Beliaikov, in a single-engined monoplane, flew non-stop from Moscow by way of the Pole to Vancouver, Wash., encountering their chief difficulties not over the Arctic sea but over the continent of North America and the worst of them after reaching the United States. Between July 11 and 14 this flight was repeated, and excelled in distance, by Mikhail Gromov, Andrei Yumashev and Sergei Danilin, who, again from Moscow by way of the Pole, reached San Jacinto, Calif. a certified mileage of 6,295.662, exceeding the previous long distance record by 638.275 miles.

**Soviet Fliers.**—August 12 the most famous aviator of the Soviet Union, Sigismund Levanevsky, left Moscow with five companions in a four-engined passenger-type plane, destination Fairbanks, Alaska. All went normally till he had reached the North Pole and flown perhaps 100–200 miles to the Alaska side of it. Then came the first sign of difficulty and the last message that for certain was received from his plane. It was to the effect that, while they had been flying previously at 6,000 metres in clear air above clouds, they had now been forced down to 4,600 metres, and into clouds, by the failure of one of their engines, and that ice was forming on the plane. This flight was not only at a very foggy season but at a time when the numerous previously level ice fields, suitable for emergency landing, had been cut up by summer rains and thaw water so that nothing better could be expected than a "pancake" landing which would destroy the undercarriage without seriously injuring the crew.

Assuming this type of landing, searches were immediately organized, both from the Old World and the New. The Soviets' own relief operations were so numerous and complicated, and have as yet been so incompletely reported, that we cannot describe them, and notice only one series of journeys which combined heartening international co-operation with notable flight accomplishment, that in which Captain Sir Hubert Wilkins, Air Commodore Herbert Hollick-Kenyon, relief pilot Silas Alward Cheesman, radio operator Raymond Booth and mechanic Gerald Brown, flew in an American flying-boat of 4,000-mile range a total of 13,000 miles over the polar sea, in five voyages between Aug. 23 and Sept. 21, highest latitude  $87^{\circ}10'$  in W. Long.  $148^{\circ}$ . Before mid-winter Soviet relief planes equipped with skis or wheels assembled at Rudolf island, on the European side, and the Wilkins party again took the field on the American side with a twin-engined plane mounted on skis. The plan from both sides is to search by moonlight during mid-winter, beginning with the January full moon; from late February the flights will have daylight, which becomes perpetual over the search area in March. The operations should continue at least until fogs become a serious handicap, in May or June.

**Weather Forecasting.**—The search for Levanevsky brought about international co-operation between scientific organizations and governmental departments of the United States, Canada and the Soviet Union, co-ordinated by the Explorers club of New York city. From this co-operation have come practical results, among them an increased accuracy in weather forecasting, particularly noticeable for Alaska and the Pacific coast of North America, but considerable for the whole continent as far east as the Atlantic seaboard.

Also of importance in forecasting are the weather reports sent out by the Arctic wireless stations of the United States army from Alaska and of the Canadian Government from the north coast of Canada and from Hudson Bay.



During the summer 1937 supplies were freighted via the North-west passage for the first time; goods coming from the west met the Hudson's Bay Company's supply ship coming from the east via Bellot strait—the first time a ship had traversed the strait. No one has yet made the entire North-west passage in one season.

**British Expeditions.**—Several small British expeditions are working in the eastern section of the Canadian arctic. One, the Canadian Arctic Expedition of 1936–39, under the leadership of T. H. Manning, studies the western shores of Hudson Bay from Southampton island northward, and the west coast of Baffin island. Four out of five of the members of the expedition have returned to England, leaving Manning to work alone. The British Arctic Expedition 1937–38, commanded by D. Haig-Thomas, with its main base at Thule, North-west Greenland, plans a survey journey down the east coast of Ellesmere island. R. Bentham's one-man expedition (British) carried on geological investigations in the southern portion of Ellesmere island.

J. M. Wordie (British) cruised to southern Ellesmere island and Baffin island; a rapid survey was made along the north-east coast of Baffin island. There were experiments with miniature balloons for the study of cosmic rays in the neighbourhood of the Magnetic Pole. A large archaeological collection was obtained by excavation in ancient Eskimo settlements.

An American expedition, commanded by Clifford J. MacGregor, was established at Reindeer point, near Etah, Greenland, with purposes chiefly meteorological. A summary of the weather is forwarded to Washington twice daily. Miss Louise Boyd, American explorer, continued the northern work which she has been doing for the last eleven years, sailing in June for Greenland to make studies of the undersea shelf believed to connect North-east Greenland and Spitsbergen.

For the first time in several years a whaling fleet operated in the Arctic, in the waters between Greenland and Franz Josef. Commercially successful coal mines are being worked in Spitsbergen on a scale of more than half a million tons per year. The economic developments of the Soviet arctic to the east, from Spitsbergen to Bering straits are so extensive as to be bewildering.

Mapping and scientific studies were carried on in Greenland, chiefly by Danish and Norwegian expeditions, but also by scientists of several other nationalities. Denmark continues to maintain Greenland as a legally closed country and carries forward its benevolent, medical and other work on behalf of the Eskimos. There are considerable economic developments, as, for instance, the expansion of sheep farming, which is now well beyond the 10,000 head limit, and the encouragement of fisheries, such as the special facilities given to Faroese fishing ships on the West coast. (See EXPLORATION AND DISCOVERY.) (V. S.)

## Areas and Populations of the Countries

**of the World.** The table that follows gives the latest known figures of the area in square miles, the population in thousands and the population per square mile of the different countries of the world.

Name of State	Area (in Square Miles)	Population (1,000's omitted)	Population per Square Mile
Afghanistan . . . . .	c. 245,000	c. 11,000	c. 48
Albania . . . . .	10,629	1,003	94.2
*Andorra . . . . .	191	5	27.4
Argentine Repub. . . . .	1,079,965	12,561	11.6
Australia, Commonwealth of . . . . .	2,974,581	6,819	2.9
Austria . . . . .	32,369	6,760	208.9
Belgium . . . . .	11,775	8,002	704
Bolivia . . . . .	514,464	3,170	6.2
†Brazil . . . . .	3,291,416	42,395	12.9
Bulgaria . . . . .	39,825	6,254	153
‡Burma . . . . .	233,492	14,667	62.8
Canada . . . . .	3,466,556	10,377	2.9
Chile . . . . .	289,776	4,530	15.8

Name of State	Area (in Square Miles)	Population (1,000's omitted)	Population per Square Mile
Chinese Republic . . . . .	c. 2,845,740	c. 418,479	c. 145.5
Colombia . . . . .	440,846	8,580	19.3
†Costa Rica . . . . .	23,000	578	25.1
Cuba . . . . .	41,634	4,108	90.9
Czechoslovakia . . . . .	54,244	14,729	271.8
*Danzig, Free City of . . . . .	754	407	540
Denmark . . . . .	16,575	3,706	224
Dominican Repub. . . . .	19,325	1,478	76.4
Ecuador . . . . .	c. 237,392	est. 2,554	c. 22.5
Egypt . . . . .	c. 380,000	15,904	24.1
Estonia . . . . .	18,353	1,126	61.3
Ethiopia . . . . .	est. 350,000	est. 7,600	c. 21.7
Finland . . . . .	134,557	3,667	27.3
France . . . . .	212,736	41,928	195.2
†Germany . . . . .	181,699	67,590	372
Great Britain and Northern Ireland, United Kingdom of . . . . .	94,278	44,937	504.9
Greece . . . . .	50,270	6,839	123.5
§Guatemala . . . . .	c. 48,200	est. 2,373	49.4
Haiti . . . . .	est. 10,204	est. 2,550	c. 294
§Honduras . . . . .	c. 46,332	962	c. 21.8
Hungary . . . . .	35,911	8,989	249.4
*Iceland . . . . .	39,709	108	2.7
India . . . . .	1,575,187	338,170	215
Iran (Persia) . . . . .	c. 628,000	c. 15,000	c. 23.9
Iraq . . . . .	116,500	2,856	24.5
Ireland . . . . .	26,592	2,905	116
§Italy . . . . .	119,740	42,527	355.5
†Japan . . . . .	148,756	est. 71,252	c. 483
Latvia . . . . .	c. 20,060	1,950	97.5
Liberia . . . . .	c. 44,000	c. 2,000	c. 44
*Liechtenstein . . . . .	65	10	157.1
Lithuania . . . . .	21,489	2,499	115.7
Luxemburg . . . . .	999	296	297.2
Mexico . . . . .	767,168	16,552	21.6
*Monaco . . . . .	c. 8	22	2519
Netherlands . . . . .	12,692	8,474	668
Newfoundland . . . . .	42,740	289	6.8
New Zealand . . . . .	104,019	1,574	15.2
§Nicaragua . . . . .	c. 50,000	est. 638	c. 15
Norway . . . . .	124,588	2,814	22.6
Panama . . . . .	34,169	407	14.5
†Paraguay . . . . .	73,200	est. 913	c. 15
Peru . . . . .	432,185	est. 6,791	c. 13
Poland . . . . .	150,052	31,942	214
Portugal . . . . .	35,490	6,825	192.2
Rumania . . . . .	113,884	est. 19,423	171
§Salvador . . . . .	13,176	est. 1,631	c. 120
*San Marino . . . . .	38	13	367
*Saudi Arabia . . . . .	c. 600,000	c. 4,500	c. 15
Siam . . . . .	200,000	est. 14,502	c. 65
South Africa, Union of . . . . .	472,550	9,588	20.3
Spain . . . . .	196,600	est. 24,583	c. 122.0
Sweden . . . . .	169,842	6,249	36.8
Switzerland . . . . .	15,944	4,066	254.8
*Tibet . . . . .	c. 450,000	est. 2,000	c. 4.3
Turkey . . . . .	295,000	16,200	55
*United States . . . . .	2,973,766	128,429	43.2
Uruguay . . . . .	72,153	2,035	28.3
U.S.S.R. . . . .	8,095,728	167,000	20.6
*Vatican City . . . . .	.17	1	6030
Venezuela . . . . .	393,976	3,406	9.7
*Yemen . . . . .	c. 75,000	c. 3,000	c. 40
Yugoslavia . . . . .	95,558	15,174	146

NOTE.—All the above-named States are members of the League of Nations, with the exception of those marked \*, which have never acceded, and those marked †, which have resigned membership; Guatemala, Honduras, Italy, Salvador and Nicaragua (marked §) have also announced their withdrawal from the League, the withdrawals becoming effective respectively on May 13, 1938, June 22, 1938, Dec. 11, 1939, Aug. 11, 1939, and June 26, 1938.

‡Burma's membership of the League is, for the present, covered by that of India.

**Argentina,** second largest country in South America, a republic, on the Atlantic coast of Southern South America; language, Spanish; capital, Buenos Aires; president, Agustín P. Justo; president-elect, Roberto M. Ortiz (takes office Feb. 20, 1938).

**Area and Population.**—The area is 1,079,965 sq.mi., approximately a third of that of the United States. There has been no official census since 1914, when the population was 7,885,000. Official estimate (Dec. 31, 1936), 12,561,361, with 76.9% native-born of European stock, 3.2% mixed blood, 19.9% foreign-born (practically entirely European). The country has a larger percentage of white population than any other American country except Canada. The bulk of the population is of Spanish blood, with an important Italian element unofficially estimated at 35%. Immigration in 1936 totalled 47,633, and was estimated at 38,000 for the first nine months of 1937. As a result of immigration and colonization



conventions made during 1937 with Denmark, the Netherlands, and Switzerland, a substantial increase in immigration is expected. These immigrants will go especially to the Andean valleys of the far south, where colonization was especially emphasized during 1937. The chief cities, with estimated 1936 populations, were: Buenos Aires, 2,388,654 (approximately 3,500,000 including suburbs); Rosario, 507,784; Córdoba, 238,300; Avellaneda (a suburb of Buenos Aires), 214,566; La Plata, 190,577; Santa Fé, 125,295; Tucumán, 123,572. Twenty-eight other cities have populations in excess of 25,000.

**History.**—Argentina has a federal form of government, with legislative powers vested in a congress. During the year 1937 no legislation of far-reaching importance was enacted, due to the fact that it was a year of presidential elections, and Congress, when it convened May 13, was engaged chiefly in political activities. In general, the legislative program of President Justo's last year in office was to carry forward his policies of previous years. Legislation for land settlement colonization to be financed by the Government, and for minimum wages, maximum hours, and regulation of working conditions was introduced.

On June 23, Dr. Roberto M. Ortiz, minister of Finance, and Dr. Ramón S. Castillo, minister of the Interior, resigned to become, respectively, presidential and vice-presidential candidates of the "Concordancia," or Government coalition, at the September elections. In the campaign, they were opposed by the Radical Party, headed by former President Marcelo T. de Alvear. In the September elections, Dr. Ortiz won by an electoral vote of 248 to 128 (popular vote: Ortiz, 1,093,928; Alvear, 815,053) and will take office for a six-year term beginning Feb. 1938.

In April the assassination of Josef Riedel, Argentine leader of German Nazi activities, in Buenos Aires, roused strong feeling and caused representations to be made by Germany. The offer of the United States, in July, to lease naval vessels to Brazil and other Hispanic-American states for training purposes (*see* BRAZIL) stirred great opposition in Argentina and was front page newspaper material for weeks.

During the course of 1937, Argentina made several important commercial treaties and began negotiations with the United States for tariff reciprocity. Trade agreements were made with Czechoslovakia, Germany, Italy, and the Netherlands. A temporary *modus vivendi* with Peru terminated a serious trade dispute of several years standing and pointed the way to a definite treaty. A tripartite agreement with Bolivia and Paraguay for commissions to develop further trade relations among the three countries was signed in February. In June the Senate ratified eight Pan-American peace treaties, the outgrowth of the Buenos Aires conference of Dec. 1936.

**Trade and Communications.**—Argentina's foreign trade in 1936 aggregated: exports, 1,652,448,651 pesos (for value of the peso, see below); imports, 1,168,210,827, a 5% increase over 1935. The rise in value was due in part to higher prices on all principal export commodities except cereals and to the generally improved economic condition of the country. Four main classifications of commodities made up the bulk of the exports: cereals and linseed, 52.1%; meat, 16.2%; wool, 9.16%; hides, 7%. Great Britain took 31.8% of the entire exports, a substantial increase; the United States, 10.5%; with the Netherlands, Belgium, Brazil, and Germany following. Great Britain likewise led in supplying imports, with 20.4%; the United States, 14.6%; Germany, 9.2%; Belgium, 6.4%; Italy, 5.2%; and Brazil, 4.8%. The largest single group of imports was textiles and manufactures (24.4%), followed by fuel and lubricants (16.4%), iron and steel and manufactures (11.35%), and machinery and vehicles (9.3%).

Argentine foreign trade increased notably in 1937. Imports were estimated to be nearly 40% and exports 49.5% greater than

in 1936. This was caused principally by increased shipments of cereals, which in turn brought about a sharp rise in bread prices, so that on Oct. 29, the Government forbade wheat and wheat flour export until the new harvest. Great Britain continued to hold first place in this period, but her proportion of exports had fallen from 34.9% to 26%, and from 21.3% to 19.6% of imports, while the United States, continuing as second, had increased her position, taking 13.5% of exports and supplying 16.4% of imports against 11.5% and 14.8% in the corresponding period of 1936. For the first ten months, Argentina's exports to the United States were the highest ever recorded, reaching a value of 1,288,671,000 pesos (\$429,570,000 U.S.). In October, for the first time since 1928, the United States led Great Britain in exports.

By far the greater part of Argentine external commerce is handled through Buenos Aires, which is served by numerous steamship lines. Late in 1937 it was announced that additional rapid steamer service from the United States would be added in Jan. 1938. Bahia Blanca is important for the export of agricultural and pastoral products from Northern Patagonia and the Southern Pampas region and for the importation of bulky commodities such as lumber into the same area; Rosario, on the Paraná, similarly serves the river provinces, while Rivadavia, in Southern Patagonia, is important for the growing oil industry. Regular air communications are maintained with Chile and with Uruguay and Brazil, and through them with all parts of the American continent, besides domestic services which link together the more distant parts of the country. During 1937, weekly service to Tierra del Fuego was authorized.

Argentina has 40,642kms. of railway lines, of which 9,264 are Government-owned. In November, the Government took over an additional 1,960kms. for a one-year period. By decree of Feb. 12, 1937, the Government authorized the reconstruction of the Trans-Andean Railway, inoperative since Jan. 11, 1934, when landslides blocked it. A maximum cost of 5,614,489 pesos was set. Resumption of service would revive a trade with Chile which formerly took 66,000 head of cattle annually. Argentina has almost half the total of telegraph and telephone lines in South America, approximately 315,000,000 kilometres. The country is traversed by approximately 300,000mi. of roads of various types. The national highway program adopted in 1932 was continued in 1937. This calls for construction of a network of 30,000mi. of national highway, at Federal Government expense, and some 600,000mi. of secondary highways constructed by the provinces with aid from the Central Government. Toward this end, annual expenditures of some 100,000,000 pesos, of which about half comes from a gasoline tax, are being made. Present construction will bring the total of national highway mileage to 22,237 by the middle of 1938, including a 2,000-mi. highway to Tierra del Fuego. Eventually, this network will connect with the international Pan-American highway system.

**Agriculture, Manufactures, Mining.**—Argentine resources are primarily agricultural and pastoral. Timber resources are very limited except in the sub-tropical north, where the quebracho, source of tannin, has been extensively developed (with a production of 21,488,615 tons in 1935), so that Argentina supplies two-thirds of the world output; maté (Paraguay tea) is also produced in large quantities chiefly for domestic consumption. The country lacks great mineral wealth other than petroleum. Manufacturing is developing rapidly, but is in no way adequate to supply domestic needs. About 10.75% of the area of the entire country is under cultivation; while 34.4% is devoted to the pastoral industry.

The chief agricultural production is in cereals and linseed. The latter production is the world's largest. In 1935-36, the production of principal commodities (in metric tons) was: wheat,



3,800,000; linseed, 1,330,200; corn, 9,969,627; oats, 510,000; barley, 460,000; rye, 127,000. Production of sunflower seed, valuable for vegetable oil, totalled 46,000 tons containing 9,900 tons of oil. Cotton production has undergone a rapid development in recent years with 308,834 hectares (1 hectare equals 2.47 acres) under cultivation in 1936, and a production of 80,957 metric tons. Because of drought conditions the 1937 crop was only 31,170 tons. In 1937, 477,900 hectares were planted in cotton for the 1937-38 crop, an increase of over 67,000 hectares.

Crop reports from Argentina in Nov. 1937 indicated a sharp decrease in cereal output, especially in wheat, due to heavy frosts; and it was prophesied that the wheat crop would be the smallest, with two exceptions, in fifteen years, with an estimated yield of 185,000,000 to 195,000,000 bu. compared with 247,000,000 bu. in 1936. Argentina, in 1934, had 30,867,852 head of cattle, 39,329,781 of sheep, 3,768,738 of swine.

In 1935 a comprehensive industrial census was taken; provisional statistics made public in 1937 showed the following: 40,367 industrial establishments, employing 464,725 labourers and 49,198 administrative and technical employees, who received 733,985,740 pesos compensation in the year ending June 30, 1935. The value of raw materials used totalled 1,960,445,754 pesos with resulting manufactured goods valued at 3,442,408,296 pesos. Industrial activity was largely in foodstuffs, involving 11,564 establishments, with 120,902 employees, 897,093,422 pesos value of raw materials, and 1,267,118,133 pesos value of finished goods. Of principal importance among them were the meat-packing houses, who employed 27,663 persons to produce products valued at 440,030,565 pesos. This and the quebracho industry are the only ones producing commodities entering extensively into foreign trade. A small shipbuilding industry exists, and in April 1937, the oil-tanker "Presidente Figueroa Alcorta," said to be the largest vessel ever built in South America, was launched.

Argentina ranks eleventh in world production of petroleum, with an output estimated at 15,550,000 bbls. in the year ending Oct. 31, 1937. The chief fields are in the vicinity of Rivadavia (Patagonia) and are, in the main, Government-owned.

**Finances and Banking.**—The monetary unit is the paper peso (official value 33¢ U.S.; free value approximately 30¢ U.S.). Argentina has the highest credit of any Hispanic-American country. No bonds of the Central Government are in default, although several provinces have suspended interest payments. On Dec. 31, 1936, the latest date for which official figures are available, the total funded debt of Argentina was 4,153,020,336 pesos, of which 1,631,225,031 pesos was in foreign currency (including 228,454,953 pesos in dollar bonds). The floating debt at the same time was estimated at 81,037,325 pesos. The total revenues, according to official provisional figures for 1936, were 1,043,000,000 pesos. For the third year in succession the budget was balanced in 1936, with a total of 873,300,000 pesos. The budget for 1937 was reduced to 833,900,000 pesos.

**Education and Religion.**—Along educational and collateral lines, Argentina is one of the most advanced of all Hispanic-American countries. The country had, in 1936, 12,867 schools, with 1,882,791 enrolment, maintained at a cost of 242,148,900 pesos. More is spent per pupil than in any other Hispanic-American country, almost twice that in the second country (Chile). The universities, especially those of Buenos Aires and La Plata, have high international standing. The Roman Catholic Church is officially recognized by Argentina, but all sects are tolerated. Most of the population is Roman Catholic.

**Army and Navy.**—There is a regular army of approximately 30,000 men. Military service for one year, or naval for two years, is compulsory. The Argentine navy is the largest in South America. The Government has been actively enlarging the navy in recent

years. During 1937, seven new destroyers, built in Great Britain, were launched.

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**Arizona.** Arizona, one of the two youngest of the American States, was admitted with New Mexico in 1912; area, 113,956 sq. mi.; population according to the U.S. census of 1930, 435,573. Restricted output of mines and smelters caused decrease to approximately 406,000 in 1937. The capital is Phoenix, 48,118. Of the population 264,378 were native and foreign-born white, 10,749 coloured, and 160,446 other races, chiefly Mexican and Indian.

**History.**—The State officials, 1937, were Chief Justice A. G. McAlister, Governor R. C. Stanford, Secretary of State J. H. Kerby, Attorney General J. Conway, Treasurer H. M. Moore, Auditor Ana Frohmiller, Superintendent of Public Instruction H. E. Hendrix. Governor Stanford, nominated by the less con-



RAWGHLIE STANFORD, governor of Arizona

servative wing of the Democratic Party entered office January 1937. The entire legislature was Democratic with one exception. The Governor's chief plank was his proposal to increase taxes on mines and railroads and to reduce the sales tax by a corresponding amount, foodstuffs, fuel, and cheaper clothing to be eliminated entirely from the sales tax. The failure of the civil service measure to pass was a disap-

pointment to those interested in more efficient government. Owing to conflicting interests within the legislature and also to those between the legislature and the executive three special sessions were called, the last adjourning Aug. 4. The first convened May 10 to deal with the administration's tax program, since the Governor had not sufficient strength to permit its introduction in the regular session. The Governor's sole victory in the special session was the provision that 60% of the sales tax be returned to the counties to relieve them of depression-caused debts.

**Education.**—The University of Arizona is located at Tucson and the two teachers colleges at Tempe and Flagstaff. The last two institutions were empowered by the legislature of 1937 to grant the A.B. and B.S. degrees. In 1937 the appropriation for the three institutions for a two-year period was \$2,671,107.35. For a number of years Arizona has had no institution for delinquent girls, private institutions having taken that responsibility. The Boys Industrial school at Fort Grant has been notorious for poor equipment and inadequate appropriations, likewise the State Penitentiary, Florence, housing twice the number of inmates for which the buildings were planned.

**Charities.**—In Oct. 1937 there were 16,645 cases or families receiving some form of public aid with a total monthly expenditure of \$648,930.92. The November expenditure was slightly less.

**Agriculture and Mining.**—Citrus fruit, cotton, lettuce, and beef cattle comprise three-fourths of the value of the agricultural products of Arizona. In January 1937, the coldest in twenty-four years, 80% of the fruit that still remained on the trees was destroyed by frost. In the fall of 1937 the crop in the orchards was estimated at 2,300,000 boxes of grapefruit and 300,000 boxes of oranges, Arizona ranking third State in the production of grape-



fruit. The cotton crop for 1937, the largest in history, amounted to 280,000 bales from as many acres. Arizona produced one-fourth of the commercial lettuce raised in the U.S., the harvest ending April 1937 amounting to 10,500 carloads taken from 31,000 acres. The beef cattle of the State number approximately 900,000 produced on grazing lands and later fed for the market.

Copper production, at the peak of the market in March, was estimated as normal. With the decline in price in the autumn of 1937 Phelps Dodge cut its production about 33% and Inspiration 70%. The value of the production for the year has been estimated at about \$45,000,000. (H. A. H.)

**Arkansas**, twenty-fifth State of the United States, popularly known as the "Bear State"; area, 53,335 sq.mi., population (U.S. census, 1930), 1,854,482; (estimate July 1, 1937), 2,048,000. Capital, Little Rock, 81,679; the next largest city is Fort Smith, 31,429. Hot Springs, a well known health resort, has 20,238. The rural population of the State (1930) was 1,471,604, or 79.4%. Of the total population 478,463 were coloured, 10,173, foreign born. State officials (1937): governor, Carl E. Bailey; lieutenant governor, Bob Bailey; secretary of State, C. G. Hall; attorney general, Jack Holt; comptroller, J. O. Goff.

**History.**—In the 1937 session of the legislature Governor Bailey had two main objectives in view, the refunding of the debt and the establishment of a merit system for office holders. Two such bills passed. The former never was utilized; the latter is regarded as one of the best civil service laws in the United States. Among other important laws passed at this session were those creating a State department of public welfare; prohibiting competition of prison labour with free labour; creating a commission for interstate co-operation; making the sales tax of 2% more comprehensive; providing for unemployment compensation; providing for soil conservation; revising the corrupt practices act; providing for the creation of housing authorities in cities of the first class; enacting a retirement act (contributory pension) for teachers; creating a State police. At the general election of 1936 an initiated act was adopted to improve judicial procedure and the criminal law, an act which the legislature had refused to pass. Also an initiated act to provide free textbooks through the eighth grade.

An amendment to the constitution exempts from State taxes homesteads up to \$1,000 and authorizes the legislature to raise the exemption to \$2,500. Another act took from the legislature the power of reapportionment and gave it to a commission consisting of the governor, the secretary of State, and the attorney general. The legislature had refused to reapportion for thirty years. An initiated act proposed an old age pension of \$50.00, but was ruled off the ballot because of defective title. It has been prepared for resubmission in 1938. A special election was called to fill the vacancy caused by the death of U.S. Senator Joseph T. Robinson. The State Central Democratic Committee nominated Governor Carl E. Bailey, but Representative John E. Miller won as an independent.

**Education.**—The public schools were hit hard by the depression and some were saved from closing only by Federal aid. In 1936 there were 3,505 grammar schools for whites and 1,293 for negroes with an enrolment of 292,805 and 106,802 respectively. There were 599 white high schools with 56,032 students and 77 negro high schools with 5,230. The preliminary report for 1937 indicated a slight increase in the white schools, a slight decrease in the negro schools. The total outlay for education in 1936 was \$11,073,498. The total for 1937 was approximately \$13,000,000. Fifty per cent of the sales tax, first laid in 1935, is devoted to education.



CARL E. BAILEY, governor of Arkansas

## Banking and Finance.

—On Jan. 1, 1938, 175 State banks and trust companies had a capital of \$7,799,000 and total resources of \$82,904,000 and 50 national banks had a capital of \$6,369,000 and total resources of \$109,993,000, the figures of both being slightly below those for the previous year. The State debt stood at \$145,603,167 on Dec. 31, 1937, a reduction of more than \$2,000,000

over the preceding year. Over 91% of the debt was incurred in building highways.

**Agriculture, Manufactures, Mineral Production.**—Agriculture is Arkansas' leading industry. Production for 1937 was considerably in excess of 1936, but low prices prevailed and the farm value was less. Benefit payments from the government, however, brought the total income above that of 1936. Crops valued at over \$5,000,000 were: 1,830,000 bales of cotton, \$74,115,000; 40,640,000bu. of corn, \$24,384,000; 814,000 tons of cottonseed, \$14,652,000; 969,000 tons of tame hay, \$9,302,000; and 9,342,000bu. of rice, \$5,325,000. During 1935 a total of 1,072 manufacturing concerns produced goods valued at \$122,447,739.

Lumber products led with a value of \$25,175,617 followed by petroleum refining with \$10,476,049. The estimated mineral production of the State for 1937 showed minerals valued at \$22,650,924, an increase of 16.53% over 1936. The three most valuable products—petroleum, coal and bauxite—maintained their 1936 positions. The value of petroleum, \$10,631,530, was the greatest; coal was second with \$3,837,471; and bauxite was valued at \$2,875,257. (D. Y. T.)

**Arkansas River:** see MISSISSIPPI RIVER SYSTEM.

**Armenian S. S. R.** A Transcaucasian republic, a member of the U.S.S.R. (*q.v.*) bordering on Georgia, Azerbaijan, Turkey, and Iran. The capital is Erevan, and the national flag has a red ground, with, in the top left corner, a gold hammer and sickle and the initials "Z.U.Z." Leading cities, with 1936 populations, are: Erevan 144,300, Leninakan (formerly Aleksandropol) 73,300 and Kirovakan (formerly Karaklis) 15,400. Area: 30,000 sq.km. Population (1933): 1,109,000 (rural 845,000, urban 264,000), 84.7% being Armenians, and 8.2% Turks. The total number of school children (1936-37) was 242,000, and there were 13 higher educational institutions with 5,000 students. On March 23 the Ninth Extraordinary Soviet Congress in Erevan adopted the new Armenian constitution. According to it, Armenia belongs directly, as an independent Union Republic, to the U.S.S.R. At the end of December a sensational anti-Trotskyist process began, at which eight leading personalities of the country were indicted. The main agrarian pursuits are: cotton and fruit (especially grapes) production, and animal breeding. The natural resources include copper, marble, and water power from the Sevan lake. The retail trade turnover (1936) was 0.5 milliard roubles, and the output of industry, 1936 (at prices 1926-27) was 180 million roubles.

The length of railways (1936) was 401km., and the freight carried was 2,307,000 tons. (S. YAK.)



COUNTRY	ACTIVE ARMY	TRAINED RESERVE	SEPARATE AIR FORCE	TOTAL	ACTIVE	RESERVE ALL CATEGORIES
USSR (RUSSIA)	1,545,000	17,945,000	—	19,490,000		
ITALY	1,331,200 <sup>a</sup>	5,638,000 <sup>b</sup>	203,395	6,294,395		
FRANCE	658,777	5,500,000	39,800	6,198,637		
JAPAN	282,000	2,000,000	—	2,282,000 <sup>c</sup>		
SPAIN	199,546 <sup>d</sup>	2,034,000	—	2,233,546		
GERMANY	650,000	1,368,000	100,000 <sup>e</sup>	2,118,000 <sup>f</sup>		
RUMANIA	222,000	1,843,600	—	2,065,600		
CZECHOSLOVAKIA	164,000	1,711,000	—	1,875,000		
POLAND	332,427	1,492,658	—	1,825,085		
YUGOSLAVIA	131,508	1,539,519	—	1,671,027		
BRITISH EMPIRE	384,780	669,897	57,034	1,111,711		
(GREAT BRITAIN)	(209,699)	(278,041)	(55,000)	(542,740)		
SWEDEN	34,179	838,000	4,700 <sup>f</sup>	876,879		
BELGIUM	91,441	670,000	—	761,441		
TURKEY	133,000	532,800	—	665,800		
SWITZERLAND	309	600,000	—	600,309		
GREECE	79,796	501,500	6,750 <sup>b</sup>	588,046		
PORTUGAL	60,690	460,500	—	521,190		
ARGENTINA	36,902	459,383	—	496,285		
UNITED STATES	166,139	308,239	—	474,378		
BULGARIA	43,700	250,000	1,380	295,080		
BRAZIL	66,072	213,298	—	279,370		
LATVIA	21,320	190,000	—	211,320		
NETHERLANDS	24,320	185,000	—	209,320		
CHILE	14,650	178,000	2,044	194,696		
AUSTRIA	38,000	150,000	—	188,000		
NORWAY	14,200	120,000	—	134,200		
FINLAND	30,336	100,000	—	130,336		
MEXICO	57,376	29,092	—	86,468		
DENMARK	11,000	69,000	1,100	81,100		
COLOMBIA	14,748	50,000	—	64,748		
BOLIVIA	5,000	54,500	—	59,500		
PARAGUAY	5,000	43,509	—	48,509		
ESTONIA	11,122	34,774	—	45,896		
HUNGARY	43,813	—	—	43,813		
LITHUANIA	20,235	20,000	—	40,235		
PERU	15,273	20,000	—	35,273		
ECUADOR	7,535	25,000	—	32,535		
CUBA	15,042	11,867	—	26,929		
URUGUAY	8,514	8,108	—	16,622		
GUATEMALA	5,980	8,020	—	14,000		
VENEZUELA	6,000	3,000	—	9,000		
EL SALVADOR	3,370	655	—	4,025		
HAITI	2,715	593	—	3,308		
NICARAGUA	2,750	500	—	3,250		
DOMINICAN REPUBLIC	3,094	(12,000) <sup>f</sup>	—	3,094		
HONDURAS	1,942	—	—	1,942		
COSTA RICA	730	—	—	730		

a. 878,200 reserves on active duty shown under active army. b. Includes reserves. c. Excludes at least 5,000,000 unorganized but trained. d. July 1, 1936. e. 60,000 aviation; 40,000 anti-aircraft. f. Rough estimate; not included in total.

**Armies of the World.** The past two years have seen in most countries a crystallization of policy with respect to the size and type of army. Many details are still the subject of experimentation with consequent changes but the fundamentals are no longer a matter of doubt. This crystallization is due to a number of causes. First, the progressive failure of the world's peace machinery has forced even the most pacifistic countries to recognize the need for sufficient armament to insure protection of those policies essential to national security. Second, the experiments carried on in most countries have determined the powers and limitations of the newer weapons with their increased rate of fire, of gas, motorization, mechanization and aviation. Third, the war in Abyssinia against a semi-savage enemy occupying a difficult terrain, the Civil War in Spain and the operations of the modernly armed and equipped Japanese army over vast distances in China against all types of Chinese troops from poorly armed and equipped to reasonably first-class units, have given a wide opportunity to check on peace time experiments. Fourth, the new German army has taken definite form. The drastic German disarmament carried out as a result of the Versailles peace treaty gave Germany the opportunity to build a new army "from the ground up." The victors in the war of 1914–

18 have to first clear away the old structures before they can begin on a new.

The two most important questions concerning the proper organization of an army were caused by aviation and mechanization. They were: first, could aviation alone produce decisive results thus making large armies on the ground unnecessary and, second, could a large force of armoured and armed motor vehicles manned by a comparatively small number of highly trained military personnel cut through, destroy and defeat large bodies of infantry in the same manner as did the armoured knight in the heyday of feudalism?

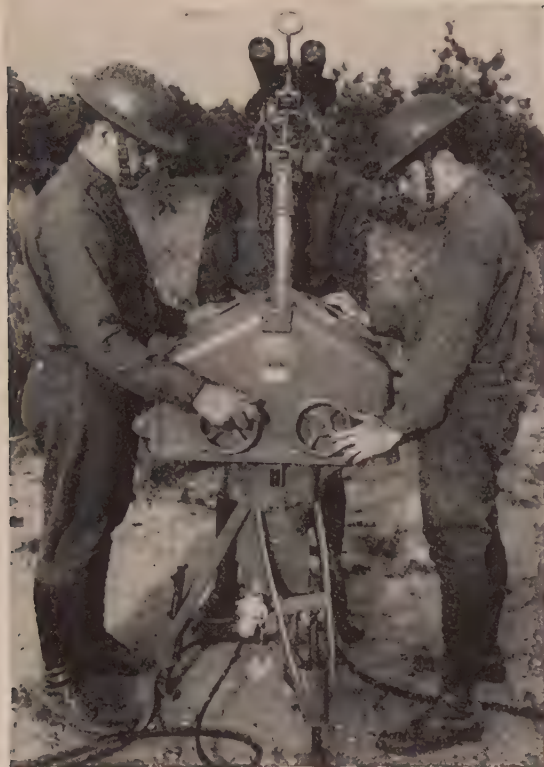
**Aeroplanes and Tanks.**—During the World War the best type of weapons to be used against aeroplanes and tanks were not developed. Above all the necessary type of range finding and sighting apparatus did not exist. Today just as the development of adequate fire power proved to be the answer to the invincibility of the knight, the rapid and accurate fire quickly developed by anti-aircraft and anti-tank weapons has put aviation and tanks in a position such that they are less to be feared by well armed, well trained and well led infantry than was true in 1918.

The backbone of the new German army is the infantry. Each infantry division has, however, a far greater proportion of anti-aircraft and anti-tank weapons of all types as well as artillery than has ever before existed for the same number of infantry. It might be said that the infantry of a German division marches and fights surrounded on the ground and in the air by a hemisphere of fire. In fact, the development of fire by modern, well equipped, well trained, and well led infantry and artillery is so great that tanks need the assistance of this fire if they are to attack successfully.

In general the mission of aviation on land is:—first, when the opposing nations are close enough to make air raids to delay mobilization and concentration of the enemy's army, and to destroy war factories and supply centres; and second, to use its great powers of surprise attack to aid its own army on the ground. While deliberate attacks on civilian population with the intent of breaking a nation's morale are possible, such use of an air force is generally considered, aside from humanitarian grounds, of far less military value than the two purposes given above.

Besides aviation and tanks, the motor has caused three other changes in armies. One is the substitution in the cavalry of armoured cars and light speedy tanks for horses for reconnaissance and cavalry screen (to check enemy's reconnaissance groups from getting information concerning main body of the army) work. Two is the substitution of tractors for horse teams to haul artillery. Three is the transport of not only ammunition and supplies, but whole divisions complete by motor transportation. This motorization will permit even more drastic changes in strategy than those produced by the use of the railways on a large scale first in the American Civil War of 1861–65 and secondly by Von Moltke in 1870. Yet the horse has not yet disappeared from either the cavalry or field artillery as experimentation shows that in many terrains and circumstances he is of more use than mechanization.





COMPARATOR, used by U. S. Army anti-aircraft batteries to aim searchlights at enemy aeroplanes



JAPANESE TANK camouflaged with bushes



A U.S. ARMY ANTI-AIRCRAFT GUN that fires fifteen thirty-three-pound shells a minute to a height of 50,000 feet



PARACHUTE JUMPERS from Russian warplanes demonstrate possibilities in landing armed forces behind enemy lines



SWISS ANTI-AIRCRAFT GUN



SWISS SOLDIERS engaged in annual manoeuvres



**Chemical Warfare.**—Gas remains as during the World War a weapon of secondary importance. Up to the present there is nothing to justify the fear of its use to cause widespread destruction.

The constantly increased proportion of automatic weapons, of guns of all types, of mechanization and motorization and the considerable number of men on the ground needed to maintain planes in the air have greatly increased the proportion of specialists in all armies. In some countries the shortening of the term of service to 18 months or one year has had to be compensated for by an increase in the number of career or professional soldiers, if the training was not to deteriorate.

**Military Service.**—In all countries of any importance except the United States, the British Empire, and China, the army is raised by Universal Service. In the United States and the British Empire the armed forces are raised by voluntary enlistment. In China the different generals raise their own forces. For some years General Chiang Kai-shek has been trying to insure uniformity of training and equipment and to bring all generals under control of the Central Government. He has been, however, only partially successful.

The length of active service in the Universal Service armies varies from 65 days for Swiss infantry, engineers and foot artillery and but one month's training for probably 25% of the Russian army, to an average for most armies of two continuous years followed by various short periods from time to time while in the reserve. As the number of young men physically fit for military service each year in most countries exceeds the number which can be trained in the standing or active army, this excess is generally given short periods of training from time to time. This is particularly true in Russia. It is their basis for claiming a far larger number of trained reserves than those possessed by any other country. On the outbreak of war the trained reserves are used;—one, to bring the standing army to war strength; two, to mobilize new units made up of reservists, and three, to replace casualties. The British army service includes both active and reserve service. The U.S. army service is only active. Thus the U.S. army lacks even the enlisted reserves needed to bring it to war strength. It has an Officer's Reserve Corps.

In Italy, Germany and Japan boys and young men are given a certain amount of training before they reach the age of military service. In the United States besides private and State military schools, there are limited courses of military training in a number of colleges and each year camps at which a relatively small number of boys receive one month's training without obligation of service. In Britain there are Reserve Officer's Training Corps in a number of schools. In the U.S. the National Guard, a volunteer civilian military force, is armed and equipped and partially trained by the National Government. In Great Britain there is a similar force called the Territorials.

In Germany, besides the professional army, there are partially trained Black Shirts (12,000 are well trained and equipped), Brown Shirts, Technical Emergency Help Corps and a number of other Nazi-uniformed bodies. In Italy the Fascist militia which is partially trained has part of its force on active duty. In addition there are Railway, Port, Forestry, Highway, Anti-aircraft, Coast Defence and other militias.

**Infantry.**—The infantry division remains as during the war of 1914-18 the basic unit of all armies today. When that war broke out the standard type of infantry division consisted of two infantry brigades, each of two infantry regiments in turn composed of three battalions—of from 800-1,000 men. Each battalion was made up of four rifle companies. While the number varied somewhat, 36 field guns to 10,000-12,000 infantry or 1.33 guns per 1,000 infantry could be taken as an average proportion. During the war increasing difficulties in finding sufficient replacements for

existing infantry units coupled with the necessity of finding the personnel for the great increase in the proportion of machine guns to rifles, the introduction of automatic rifles, trench mortars and anti-tank guns; all led to a reduction in the number of infantry soldiers—in most of the infantry divisions of the French, British and German armies. This was generally accomplished by reducing the division from four to three regiments and each regiment from three battalions of four companies each to three of three companies each. Thus instead of 48 companies of infantry a division had 27 companies—a net loss of 21. As a rule the artillery per division of infantry was not decreased, with the result that the proportion of artillery to infantry increased. As the amount of Army Corps (two more infantry divisions to an Army Corps) and army (two or more Army Corps to an army) artillery steadily increased as did the artillery directly under the commanding general of each national army the proportion of artillery to infantry was greatly increased.

Post-war developments have steadily tended to increase the proportion of automatic weapons and guns of all types which now include trench mortars, anti-tank and anti-aircraft weapons as well as field guns and howitzers. Thus to prevent the infantry division from becoming too cumbersome to be handled as a unit by the Commanding General, a reduction in the number of infantry riflemen had to be made. The increasing use of motor transport to move the division also made a reduction advisable. Various methods of reduction have been advocated. A continuation of the war division of three regiments of infantry each of three battalions of three companies each is one method. Infantry battalions of four companies each but with a lesser number of men per regiment is another.

Today Japan is the only important country in which the Infantry Division still consists of two infantry brigades, each of two infantry regiments made up of three or four-company battalions. France, Germany and Russia have suppressed the infantry brigade. Each has three regiments of infantry to the division. Great Britain from the days of the Cardwell reorganization has used a battalion instead of a regiment as the tactical unit. Four battalions grouped together constitute a brigade. It is commanded by a Colonel with the temporary rank of Brigadier General. Three of these brigades constitute an infantry division. The organization of an infantry division is being experimented with in the United States with particular reference to insuring mobility for the whole division by means of motorization and mechanization. The probabilities are that this will lead to the replacement of the present division of two infantry brigades, each of two regiments, each of three to four-company battalions by one of three infantry regiments, each of three or four-company battalions. In practically all armies the infantry regiment is now of three battalions. In the French, German, Italian and Russian armies there are three companies to a battalion. In the British and Japanese armies there are four. An infantry of 10,500 is the strength in most countries. Germany has but 8,400 while Japan has 15,138.

**Artillery.**—The proportion of rifles and light and heavy machine guns per 1,000 infantry soldiers varies. Japan has the highest number of rifles, 837, and France the lowest, 277; Germany the highest number of light machine guns, 38.6, and Italy the lowest, 23; Russia the highest number of heavy machine guns, 15.8, and Japan the lowest, 6.5. Germany leads with by far the greatest number of close support weapons for the infantry; such as mortars, small calibre light guns, howitzers, anti-tank guns. Per infantry division the total is around 231. Most other countries average under 100. Russia has but 38. However, each Russian infantry regiment has 6-76mm. field guns assigned to it. This in addition to the divisional artillery.

The divisional artillery consists of one or more regiments of



artillery except in the British army where there is no regimental tactical organization—the three battalions being organized into a brigade which is the equivalent of a regiment in other armies. Where there is more than one regiment the artillery is organized into a brigade. The regiments are of two to four battalions of two or three batteries each. Batteries are of three, four or six guns, four being the more usual number. Except in the British and Italian armies where only guns are assigned to the divisional artillery, the divisional artillery consists of both guns and howitzers. One of the questions under discussion in various armies is whether it is better to have only guns with the infantry division, the howitzers being with the Army Corps artillery and sent to the divisions when needed, or to have the howitzers an integral part of the divisional artillery. The light guns are around 3in. in calibre and the heavy from 4in. to 4.5 inches. The light howitzers are around 4in. or 4½in. in calibre and the heavy around 6 inches. The number of artillery pieces per 1,000 men in the division varies from 1.87 in the Japanese army to 3.49 in the German army. In all countries while the fundamentals of an infantry division have generally been decided upon changes in detail are constantly taking place.

**Cavalry.**—There are three types of cavalry division today:—one, entirely mechanized; two, mechanized reconnaissance units with the mass of the division still horsed and, three, horse divisions. Russia with about 23 horse cavalry divisions has by far the greatest amount of horse cavalry. Germany is the leader in having an independent mechanized force directly under the high command with a "Panzer Corps" of at least two mechanized divisions. Russia is reported to have from two to six mechanized divisions, but how far these are actually "in being" is not known. Great Britain has one independent mobile division consisting of two mechanized brigades, one tank brigade, one infantry battalion and service troops. The Japanese Kwantung army is motorized and mechanized, but the details are secret. France has one light mechanized division (cavalry) and is organizing another. In Italy the mechanized forces are under army unit commanders.

In the United States and Japan, the army and navy each have their own air forces. In other countries the air forces are independent of the army and navy except that in Russia the land forces, air force and sea forces are all parts of the same organization.

**Maginot Line.**—In France the construction of the Maginot Line of fortifications along the German border is responsible for two new developments. First, the line itself is not a series of strong detached forts with long intervals of open ground between as were the old lines from Verdun to Toul and from Epinal to Belfort. Instead, it is a long trench system of the 1914–18 war with all the machine gun nests, battery positions, observatories in concrete and steel instead of earth and wood plus an elaborate system of concrete dug-outs and communicating tunnels with gas proof chambers, kitchens, living quarters, supply and ammunition chambers and dressing stations for the wounded. In the second place, the officers and many of the troops needed to garrison this line are part of a new special frontier corps permanently quartered alongside their defence sector. The reservists necessary for war strength are the male inhabitants of the nearby villages. This corps was brought into existence to prevent the danger of the line being broken through before the fortifications could be manned by a surprise attack of a mechanized and motorized force supported by aviation. (See also MARINE CORPS; MUNITIONS OF WAR; NATIONAL GUARD; WARFARE; WORLD ARMAMENTS.) (H. J. RE.)

## Armstrong, Henry Edward

(1848–1937), British chemist, who taught in London for 30 years, died in London, July 13, 1937. The *Encyclopædia Britannica*, vol. 2, p. 394, contains a brief biography.

**Art:** see ARCHITECTURE; PAINTING; SCULPTURE; etc.

## Art Exhibitions.

In the United States, Mr. Jules S. Bache announced his intention to present to the State of New York his house filled with art treasures, one of the finest collections in the U.S. This has since been opened to the public. In New York, also, the Van Gogh exhibition reopened at the Museum of Modern Art; pictures and prints dealing with sport were shown at the Metropolitan museum, followed by The Art of Renoir; and at Wildenstein's, "Thirty Years of Manet." At the Pennsylvania museum 10 new galleries devoted to French art were opened, and 50 paintings by Guardi were placed on view at the Springfield Museum of Fine Arts. The Metropolitan museum of New York celebrated the 200th anniversary of John Singleton Copley, R. A.

Throughout the summer an important exhibition of works by Frans Hals, 34 being loaned from America, was held at Haarlem, Holland.

The prospects of a coronation season encouraged a heavy crop of art exhibitions in London. Following the Jubilee exhibition of the British school at Athens, Burlington house in London opened its doors in January to a retrospective display of British architecture covering the past 336 years, an interesting feature of which was John Nash's original layout for the Regent's Park estate. At Knoedler's were shown a series of portraits of royal and noble personages by Winterhalter (d. 1873). During February, a loan exhibition of works by Sir Joshua Reynolds was held at Sir Philip Sassoon's house in Park lane. The principal events during April were the Centenary exhibitions of John Constable at the Tate gallery, at Wildenstein's and at the British museum; and the opening by the King of the National Maritime museum at Greenwich.

The coronation month (May) began with the annual Royal Academy exhibition, and the Royal Treasures exhibition, continued from the previous month. Pictures and relics illustrative of the Kings and Queens of England were on view at the Victoria and Albert museum, a coronation exhibition was held by the Royal Society of British Artists, and modern painters, mostly French, were being shown at the Leicester galleries. A further coronation exhibition was held at Agnew's. Gems of painting and of engraving were at Sabin's.

Works by Wilson Steer were seen at Barbizon house, followed by those of Henry Tonks, late Slade Professor at University college. On June 29 extensive new sculpture galleries, the gift of Lord Duveen to the Tate gallery, were opened by the King.

Late in September, the antique dealers' fair staged its fourth annual exhibition at Grosvenor house (London), remaining open for three weeks, and Sea Power pictures at the New gallery were introduced by Mr. Winston Churchill. Throughout November 240 works in oil- and water-colour by Peter de Wint were shown at Lincoln City.

Later in the year also, a new experiment in presentation was the documented and "extra-illustrated" exhibition in Paris of works by Van Gogh at the Musée d'art Moderne.

The seasonal salons in Paris took place as usual, but were somewhat eclipsed by the wonderful display of 1,000 masterpieces of French art from Gallo-Roman times to the 20th century at the Musée Moderne in the International exhibition. Examples of Catalanian and Austrian art of the 19th century were placed on view at the Musée du Jeu de Paume, and, in July, paintings by El Greco, nine of them lent by King Carol II of Rumania, were shown at the Galerie des Beaux-Arts. An extensive gathering of modern paintings, drawings, sculpture, and engravings by the *Maîtres de l'Art Indépendant* was to be seen at the Petit Palais. Paintings by Gauguin were shown at the Galerie des Beaux-Arts; works by Turner and Blake at the Bibliothèque National introduced



to the French public certain specialized and individual aspects of British art, and at the Musée des Art Décoratifs were over 400 drawings by Constantin Guys. An important show of Rubens and his Time at the Orangerie in Paris was a notable event earlier in the year. (See also ART GALLERIES AND ART MUSEUMS.)

(H. G. F.)

**Art Galleries and Art Museums.** The year 1937 started off with an epochal event. In his New Year's mail President Roosevelt found a letter from Andrew W. Mellon, former American ambassador at the Court of St. James, in which the United States Government was offered the Mellon collection, valued around \$20,000,000, a building for it to cost about \$10,000,000, and an adequate endowment for staff and growth. This *étrenne* which promises to amount to some \$50,000,000 was accompanied by a number of conditions, all of which proved acceptable, and subsequent legislation consummated the gift. The new museum is to be called the National Gallery of Art and as an autonomous unit of the Smithsonian Institution to be located on the Mall in Washington. While the works of art of the Mellon collection form already a substantial nucleus, the gallery will be of greater importance because of the opportunity for growth afforded by its endowment and by its claim on Government support. The most interesting of Mr. Mellon's conditions was that new acquisitions be kept to the standard of quality of the donor's collection. He also stipulated that John Russell Pope be the architect, and before Mr. Pope's death, Aug. 28 (following Mr. Mellon's Aug. 26), the architect's plans were sufficiently advanced for the condition to be met.

Meanwhile from the designs of Mr. Pope, associated with the London architects Messrs. Romaine-Walker and Jenkins, five new halls for sculpture, Lord Duveen's gift to the Tate gallery, were completed. Architecturally they restore unity to the design of the gallery and the three largest form a magnificent vista nearly 300ft. in length. The formal opening in June was the principal museum event of the year in London, but an important new foundation, though it does not involve a new building, is the University of London Institute of Archaeology housed at St. John's lodge in Regent's park. St. John's lodge is a neo-classic mansion of 1819, subsequently the town house of the Marquesses of Bute. At the outset the institute will concentrate on the archaeology of Palestine and of the British Isles: the extensive collections resulting from Sir Flinders Petrie's excavations in Palestine are installed here as well as considerable material of the early iron age and Roman period.

Another capital to receive a new art museum in 1937 was Paris, where among other buildings the International Exposition brought into existence a Musée d'Art Moderne. This was opened in June, a building in the international style, on the avenue Président Wilson facing the Musée Galliéra and running through to the Seine. The building has two separate parts joined by a colonnade and sculpture court. The western part is a national museum intended to replace the Luxemburg after the Exposition. The eastern part is a city museum, an adjunct of the Petit Palais, which it will supplement in the display of the collections of the city of Paris, chiefly formed by purchases from the annual salons since 1875. The International Exposition has also occasioned the complete transformation of the Palais du Trocadéro. The central block has been removed and the two wings redesigned in white stone. The west wing will house the famous Musée de Sculpture Comparée, the east the Musée d'Ethnographie and a new museum of French folklore.

While the development of museums in the world's capitals is conspicuous, it is perhaps less significant than the ubiquitous

museum activity in remote parts of the world. Some of this activity is as peripheral in character as it is in geography, and more new ideas may come from it because of its variety. The publication, delayed until 1937, of the sixth volume, *India*, completed the Museums Directory (of the British Empire) published by The Museums Association, London, and caused a great deal of comment. First, the world in general was oblivious of the 105 museums in India. Second, the problems of a museum are novel in a country where literacy is not regarded as a panacea. Third, the whole status of museums is in question where 90% of the population are not urban and where there are 3,000,000 inhabitants per museum—in contrast to the 48,000 per museum in Norway. As with regard to so many other matters India offers in connection with museums its usual challenge to Western civilization.

The report in the spring of 1937 of the Empire Grants Committee, which since 1934 had made 25 grants totalling about £11,000; the money was given for these grants by the Carnegie Corporation of New York, brought to public attention many almost unknown museums scattered through British possessions from the Fiji islands to the Falklands and from Bermuda to Zanzibar. Even in England it is notable that the most important new museum of 1937 is not in London but at Sheffield where the City museum was opened in April. Combined with it is an extension to the Mappin Art gallery. The former provides a dignified home for the Sheffield collections of cutlery, metalwork, pottery, silver, etc.; the latter contains some 300 objects from the art collection of Alderman Graves, who had already given to Sheffield the Graves Art gallery opened in 1934.

In the United States, while there has been growth at many of the great art museums, such as the wing added to the Cincinnati museum, the ten new galleries for French art opened at the Pennsylvania museum, and the new wing of the Baltimore museum, the year 1937 has been characterized also by the museum activity of remote districts. Two of the smallest of the State universities, Maine and Montana, have undertaken the building of art galleries (other new museums are at the University of North Carolina and the University of Colorado), and the lesser cities have been the ones to acquire museums during the year, such as Little Rock, Ark.; Syracuse, N.Y.; and Grand Rapids, Mich. (for furniture). The inevitable result of taxation in America is to cause the large private collections to become public property. In 1937 two such transfers occurred—the collections of the late John Ringling at Sarasota, Fla., and of Jules Bache in New York.

The Paris Exposition, like that of Chicago before it, is indicative of a coming trend in museum development. Open air museums have long been characteristic of Scandinavia, where the first one "Skansen," was opened by Dr. Arthur Hazelius over 50 years ago. The majority of these were designed to show the peasant life of bygone days but such a one as that at Aarhus, Jutland, founded in 1909 shows the life of an old town, and it is the open air museum of this type that has been the inspiration of the various "villages" of the Chicago and Paris fairs. Something of the same sort is the Williamsburg, Va. reconstruction, and the restoration of the Derby Wharf national historic site at Salem, Mass. Minor examples of the same sort of thing can now be expected anywhere. Two approaching the Scandinavian models and dating from 1937 are the Mandan village (an Indian village) in North Dakota and the similar reconstruction at Mound park, Tuscaloosa, Ala.

Historic spirit likewise underlies the transformation of a great number of houses into new museums. Most of these historic house museums definitely propose to preserve a record of a specific period, frequently of the period when some conspicuous personality was resident in the house. One of the most successful



examples in England is Belgrave hall, a house of the early 18th century, with appropriate furnishings, which was opened as a public museum of Leicester in May. Among historic houses in the United States recently converted into museums are those of the Presidents, Andrew Johnson, James Buchanan, and Benjamin Harrison; of the poets, James Whitcomb Riley, Paul Laurence Dunbar, and Edgar Allan Poe; of the admiral, John Paul Jones, the general, Stonewall Jackson, and the painter, Winslow Homer. In some cases the undertakings of this sort will serve both art and history, for example, making a State park of the Ephrata Cloisters in Lancaster county, Pa., where the church, Sisters' House, Brothers' House, and several small structures will form an open air museum of unique architectural character and historic significance. In other cases sentiment will chiefly be served, for example, by the Betsy Ross house and by the Squire Boone farm (birthplace of the explorer Daniel Boone). (J. Sy.)

**Arthritis.** The greatest recent advance in the conquest of arthritis has probably been made in its prevention. By recognizing the disease early, and instituting correct treatment before permanent joint changes have taken place, the disease can be cured or arrested in the vast majority of cases. Support is constantly being added to the belief that complaints such as neuritis, bursitis, lumbago, sciatica, or sacroiliac disease are in reality indications of beginning arthritis. Palliative treatment in these cases may give temporary relief, but years later many of these patients develop general joint disturbances. If a more comprehensive attack on the arthritis problem is instituted when the first symptoms appear, further involvement of the joints may be prevented.

A well rounded plan of treatment for arthritis must include measures to remove or relieve any existing infection. Vaccine is to be used to combat the effects of infection. Dietary regulation is frequently necessary, the most satisfactory diet consisting of simple foods, an abundance of fruit and green vegetables, and a moderate amount of protein and carbohydrate. Rich, high calorie foods should be restricted. Incorrect living habits and emotional difficulties should be adjusted. An abundance of rest is helpful and exercise should be gauged to the patient's capabilities. Physical measures such as baths, hydrotherapy and light massage are necessary to maintain muscular tone and mobility of the joints, and in cases where crippling is more advanced, underwater massage and exercise in the therapeutic pool is helpful.

Among the measures which have been receiving increased attention in recent years may be mentioned short wave diathermy, iontophoresis (forcing drugs through the skin by means of galvanic electric current), fever treatment, sulphur injections and massive dosage of vitamin D. In spite of an occasional enthusiastic report, it does not seem likely that any of these measures is destined to a permanent place in the treatment of arthritis.

The causes of arthritis are still the subject of considerable controversy. The disease results from a combination of disordered bodily functions some of which may be inherited. Focal infection or sensitivity to germs or their poisons is the important causative factor in most cases. Germs of the *streptococcus haemolyticus* group are most often the infecting agent although other germs may play a part. Environmental conditions and emotional disturbances are important factors in predisposing a person to arthritis and such elements as physical or mental fatigue, injury to the joints, digestive disturbances, respiratory infections, and the menopause are frequently involved in precipitating the onset of the disease. (M. F. L.)

**Artificial Respiration:** see IRON LUNG.

**Artificial Silk:** see RAYON.

**Artillery:** see ARMIES OF THE WORLD; MUNITIONS OF WAR.

**Art Sales.** For various reasons the most important Continental and many American sales in 1937 were staged in London. In April, 43 pictures, owned by Capt. C. N. F. Loyd, mainly Dutch, were sold at Christie's for £53,487. On April 19, the sale of the extensive Rothschild collections at 148 Piccadilly was undertaken by Messrs. Sotheby. Twenty pictures were sold for £23,000, including £17,500 for a work by De Hooch, the highest price of the year. The Continental and English plate realized over £40,000, and with the remaining objects the total achieved was £125,000. This marked the season's culmination. At a sale of armour at Sotheby's, the funeral helm of Henry VI was acquired for St. George's Chapel, Windsor.

In New York, at the American Art Association Anderson Galleries, a record was made by the sale of a silver monteith by John Coney of Boston (1655-1722) at \$30,000, and, also in April, the Hubert Lawton collections, American furniture, pictures, etc., realized \$93,000.

At Christie's in May, 120 pictures from the Leonard Gow collection reached a total of £43,000, while at the same rooms 140 lots of silver fetched over £17,000, including a parcel-gilt tankard, sent by Lord Rochdale (£11,950). In New York, the colossal assemblage of works of art forming the Brady collections were sold for \$471,000 (American Art Association Anderson Galleries).

At a sale of pictures totalling £47,000 on July 2 at Christie's, £12,500 were given for 23 drawings by Turner, from Farnley Hall. At Christie's also, in a silver sale which yielded £13,030, the mace of the Irish House of Commons (1765-1801) was purchased by the Bank of Ireland for £3,100. At Christie's, again in July, eight paintings of Canaletto from the Earl of Lovelace realized £11,030.

Paintings, the property of the late T. S. Pearson Gregory, included five overdoor panels by Boucher, which reached the unexpected sum of £23,000, and £14,000 resulted from the sale of Sir Leicester Harmsworth's pictures. July also saw the dispersal at Sotheby's of the W. F. van Heukelom (Amsterdam) collection of Chinese porcelain, which attained nearly £15,000. On the 22nd, the famous Greffuhle collections from Paris (pictures and works of art) achieved £62,300, which included a drawing by Watteau, £5,800. In October, Messrs. Christie sold the remaining contents of the Clumber mansion and gardens on the premises for about £11,500.

The re-opening of the season in November saw the dispersal of the Guilhou collection of rings, sent from Paris, a four days' sale at Sotheby's resulting in £15,000. The Martin Erdmann mezzotints, sent to Christie's from New York, brought £17,234, with other articles totalling £31,364. English silver, the property of an American collector, yielded £21,664 at Sotheby's on Nov. 15. (See also BOOK SALES.) (H. G. F.)

**Asbestos.** A world output of 400,000 metric tons in 1929 declined to 205,000 tons in 1932, reached a new high record of nearly 500,000 tons in 1936, and will probably show a still further increase in 1937. Asbestos is a mineral that is largely of British origin, since 90% of the 1929 output and 70% of that of 1936 was mined in the British Empire. In 1936 Canada supplied 54% of the world total, Southern Rhodesia 10%, South Africa 4% and Cyprus 2%; the only large producer outside the Empire was the Soviet Union, with 26% of the 1936 total, increased from 7% in 1929. The only other large producer to increase output was Rhodesia, where production has expanded by one-third since 1929. The United States consumes over one-half of the world supply but has only a minor output, which, however, has increased by more than threefold during the past few years, reaching 10,000 tons in 1936. (G. A. Ro.)



**Ascension:** *see* ST. HELENA AND ASCENSION ISLAND.

**Ashton, Algernon Bennet Langton** (1859-1937), British musical composer; born at Durham, Dec. 9. He lived at Leipzig from the age of three to that of 20, and studied music there under, among others, Franz Heinig, Karl Reinecke, and E. F. Richter, and later at Frankfort under Joachim Raff. After having returned to England, he was professor of the pianoforte at the Royal College of Music from 1885 to 1910, and from 1913 to 1935 was on the staff of the London College of Music. He published a very considerable amount of music, much of which is of a high quality; but was more in the public eye as a prolific writer of letters to the Press. In 1909 he married Ethel Clara Hall, and he had one son. He died in London, April 10, 1937.

**Asia Minor,** a geographical term, no longer in local or official use, formerly employed to designate the peninsula on the extreme west of the continent of Asia, bounded on the north by the Black sea, on the west by the Aegean, on the south by the Mediterranean, and on the east by the Armenian plateau, being separated from Europe on the north-west by the Bosphorus and Dardanelles.

**Asphalt.** More than half of the world supply of native asphalt comes from the famous asphalt lake of Trinidad; the bulk of the remainder is divided between Egypt and the United States, with possibly 10% distributed among several minor producers. A number of countries, with the United States in the lead, produce considerable quantities of asphaltic or bituminous rock, carrying usually less than 10% of true asphalt. The largest item, however, is petroleum asphalt, of which there was produced in the United States in 1936 some 5,500,000 short tons, two-thirds from domestic petroleum, and one-third from foreign. As compared with this, the domestic production of bituminous rock was 547,000 tons, and native asphalts only 33,700 tons. (G. A. Ro.)

**Assassinations.** A list of assassinations, actual or attempted, during 1937 includes:

- Feb. 4 General Wang I-chey, Shensi province, China, assassinated by mutineers.
- Mar. 17 Miss Magda de Fontanges shot and wounded Count Charles de Chambrun, former French Ambassador in Italy, over alleged disruption of romance with Mussolini.
- July 14 Lisbon, Portugal. Attempted assassination of Prime Minister Antonio de Oliveria Salazar by bomb. Statesman unhurt.
- July 18 Warsaw, Poland. Attempt to bomb Col. Adam Koc, politician. Assassin killed.
- Aug. 12 Bagdad. General Baqir Sidqi, dictator of Iraq, assassinated by soldier. Major Mohammed Ali Jawdat, Commander of Iraq's air force also killed.
- Sept. 26 Nazareth. Lewis Yelland Andrews, District Commissioner of Galilee and his bodyguard Constable Peter R. McEwan shot and killed.
- Oct. 12 Beirut, Syria. United States Consul James Theodore Marriner killed by crazed Armenian.

**Association for the Advancement of Science, American:** *see* AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

**Association for the Advancement of Science, British:** *see* BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

**Association of American Universities:** *see* UNIVERSITIES AND COLLEGES.

**Astronomy.** In astronomy, probably more than in other sciences, a large proportion of the year's work is of a routine character. Examples of such work are: cataloguing stars according to position in the sky and recording their apparent magnitudes, spectral types, proper motions, and determining their parallaxes; systematic observations of variable stars; observation of motions of the Solar System; recording solar activity; making surveys of extra-galactic nebulae. Further, extensive mathematical and physical investigations are carried out as necessary preliminaries to forming theories of astronomical phenomena. So the results about to be described, selected for their representative or novel character, are *immediate* fruits of only a fraction of the year's activities.

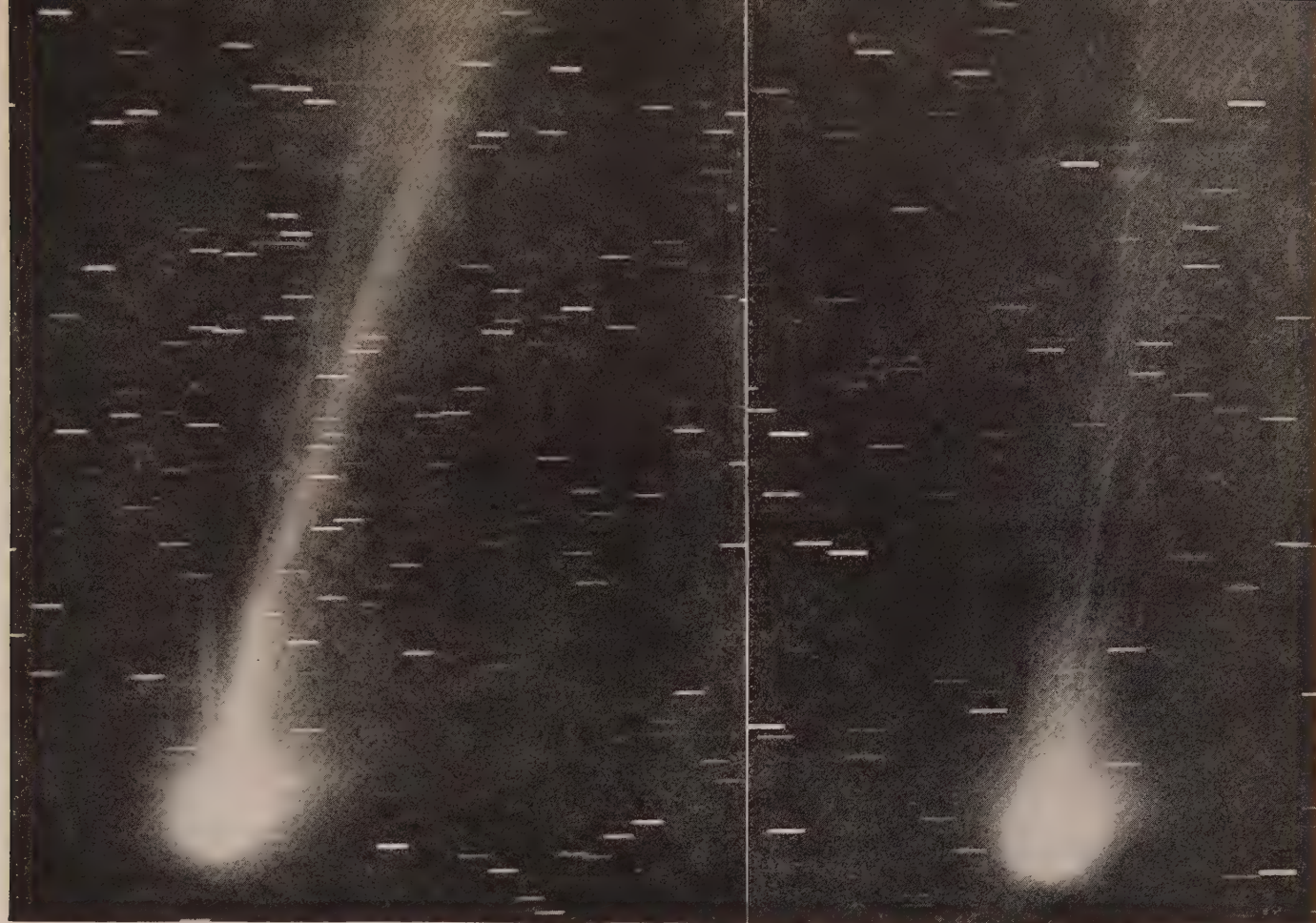
Before giving these results, we may instance just one of the modes of investigation of recent growth, which is leading to new astronomical discoveries. Since our knowledge of celestial objects is derived almost exclusively from the radiation they transmit to us, advances in this knowledge depend on increasingly refined study of this radiation. A recent refinement is the study of *line profiles*, a highly technical investigation of the minute detail in the structure of absorption and emission lines in astronomical spectra. It is now understood how nearly all the physical circumstances of a star's atmosphere influence the profiles of the lines in its spectrum; thence very accurate knowledge of the surface layers of stars is being obtained. Similar methods are applied to the study of gaseous nebulae and interstellar matter, and even planetary atmospheres.

**Solar System.—The Sun.**—This has been a year of great solar activity, as was to be expected, since a sunspot maximum in the 11-year solar cycle occurs early in 1938. Some sunspot groups in recent months were amongst the largest ever recorded. An important discovery has been made concerning bright solar eruptions. These consist in a sudden ejection and subsequent dispersal of intensely luminous gas, probably mainly hydrogen, from small areas of the sun's surface, usually near sunspots, the whole phenomenon lasting on the average about 20 minutes. It is found that sudden radio fadeings on the sunlit side of the earth frequently occur at the same time as these eruptions, and are of similar duration. It appears therefore that these small parts of the sun's atmosphere emit some kind of radiation, travelling with the velocity of light, which profoundly affects the state of the earth's ionosphere. Incidentally, it has also been discovered that the ionosphere may be influenced by the entry of a meteoric shower.

Motion pictures have now found a place in astronomy, having been successfully made at the 1936 and 1937 solar eclipses, and also during the year many astronomers have seen the films made at the McMath-Hulbert Observatory of various types of solar prominences "in action." Colour-photographs have also been made at recent eclipses.

The solar eclipse of June 8, 1937, gave the longest period of totality, over seven minutes at noon-point, of any eclipse since A.D. 699. Unfortunately its track lay almost entirely over the Pacific ocean. However, it was successfully observed from Canton island, in the Phoenix group, by New Zealand and U.S. expeditions, and from Peru, shortly before sunset, by Japanese, S. American, and U.S. astronomers. The corona was of the form characteristic of spot-maximum, and estimates of its total light vary from 0.5 to 1.5 times that of full-moon. Dr. Dunham announced the discovery of new lines of unknown origin in the blue region of its spectrum. Much curiosity was aroused by reports that photographs taken by Major Stevens from an aeroplane in Peru, at a height of 25,000ft. showed a "globular" corona much more extensive than that photographed through the earth's lower atmosphere. This is taken to confirm the view already held by astronomers, that the coronal "streamers," usually featuring prominently in





COMET FINSLER, discovered by Dr. P. Finsler of Switzerland, July 4, 1937, which came within 45,000,000 miles of the earth August 9

photographs, do not constitute the whole corona, which consists in addition of a more uniform envelope extending round the sun to a height greater than that to which the streamers are visible.

Dr. B. Lyot made a great advance in 1931 by photographing the corona, from the Pic du Midi, without an eclipse. This year he published new results of such observations, including the profiles (*see above*) of the emission lines in the coronal spectrum, the only important lines in astronomical spectra whose origin is still unknown.

**Planets.**—Recent redeterminations of the moon's motion have enabled Dr. Harold Jeffreys and Dr. Spencer Jones to recalculate the figures of the earth and moon. They find for the reciprocal of the earth's ellipticity (the ratio of the difference between the equatorial and polar diameters to the equatorial diameter) values  $297.19 \pm 0.52$  and  $296.08 \pm 0.95$  respectively. Jeffreys finds the moon to be of nearly homogeneous density, and that the high values he obtains for its ellipticity cannot be explained if it be supposed to have solidified when keeping the same face to the earth, but could be explained if it was rotating in about three and a half days when solidification occurred.

**Comets.**—This year has seen the 39th reappearance of Encke's comet since its discovery in 1786. Comet 1937f (Finsler) reached a brightness of fourth magnitude in August, so it could be seen with the naked eye. It developed a tail, extending over more than  $20^\circ$  of the sky, which showed rapid variations in structure.

Dr. Robertson has recalculated the retardation experienced by a particle moving round the sun, due to the radiation field, this being analogous to the drag on a body moving through falling rain. The effect is not great enough to account for certain unexplained peculiarities in cometary motion, but is important in precluding the continued existence of certain resisting media sometimes supposed present in the solar system.


**Stars.**—*Special Stars.* A star of peculiar interest is  $\zeta$  Aurigae.

It is an eclipsing binary star, of which the components are a red super-giant K-type star, whose radius is about 300 solar radii, and a normal B-type star, whose radius is between two and three solar radii. At the beginning and end of the eclipse the light of the B-star reaches us through the atmosphere of its companion, the depth of this atmosphere being of the order of one-quarter the K-star's radius. The analysis of the observations makes possible for the first time a measurement of the structural details of the outer atmosphere of a star other than the sun. The period is 972 days; an eclipse occurred this year, commencing April 21, numerous observations being made. An interesting preliminary result is that the whole eclipse lasted about 13 hours longer than the preceding one (1934), probably indicating that the depth of the K-star's atmosphere was about one per cent greater in 1937 than in 1934.

No notable ordinary novae have been discovered this year, but observations continue to be made on those of recent years. Nova Herculis 1934 evidently split into two components during its outburst, and this year's observations show that the distance between the components is increasing at an approximately constant rate.

A significant result now being established is that there are apparently *two* classes of novae, ordinary novae and *super-novae*. The former at maximum generally reach an absolute brightness from 10,000 to 100,000 times that of the sun, while the latter appear to reach a brightness from 10 to 100 million times that of the sun, or even more. They are the only individual stars which can be seen up to about the greatest distance to which extra-galactic nebulae can be observed. It is estimated that, in any one galaxy, about 30 ordinary novae appear annually, while a super-nova occurs on an average only once in several centuries. "Tycho's star" of 1572, which could be seen in daylight, was probably one in our own galaxy. Dr. Zwicky has instituted a systematic search for these objects, and already, in August and September (1937), has





TOTAL SOLAR ECLIPSE, June 8, 1937. Photo by J. E. Willis of the National Geographical Society—U.S. Navy Expedition to Canton Island

found two. The former is in the nebula in Canes Venatici, and its spectrum was secured.

The estimated absolute brightness (— 16 magnitudes) of the latter, when first observed, made it the most luminous known celestial object, considerably exceeding the total brightness of the nebula (N.G.C. 1003) in which it occurs.

**Stellar Structure.**—Astronomers are still attacking the problem of the source of energy-generation in stellar interiors, having regard to the latest laboratory data on atomic transmutations. The theory, current a few years ago, that stellar energy is produced by the annihilation of atoms, has now given place to the idea that it is produced by the building up of heavy atomic nuclei out of lighter ones. This process results, as is well known, in a net loss of mass whose energy-equivalent must ultimately reappear as radiation. It is supposed that a star commences its life as a mass of pure hydrogen; collisions between its atoms produce firstly neutrons and then the nuclei of light elements, notably helium; these in turn act as catalysts in building up heavier atomic nuclei. It is calculated that these processes would liberate sufficient energy to maintain the sun's radiation at its present rate for  $3 \times 10^{11}$ : i.e. 10 to the power of eleven, years, which on the whole fits in with other estimates of the age of the stars.

**The Galactic System.**—Fresh data appear to demand no fundamental revision of the general ideas of the structure and motion of the galactic stellar system sketched some years ago by Shapley and Cort, respectively. Professor B. J. Bok, summarizing our present knowledge, endorses Seare's suggestion that, seen from outer space, the Milky Way very possibly would look like the spiral nebula in Triangulum; our sun would be in one of the

spiral knots about two-thirds of the way from the centre of the nebula to its edge. It would be seen to possess a central layer of obscuring material, about 500 parsecs thick.

Current studies of galactic nebulae, zodiacal light, the "fixed" calcium and sodium lines, and the absorption of light in space, are revealing the nature of this material, showing it to consist partly of atoms and partly of dust particles. This year evidence of the presence of *molecules* has also emerged.

**Extra-galactic Nebulae.**—As examples of the magnitude of current investigations of extra-galactic nebulae, or "island universes," one may cite the publication of surveys by Hubble (end of 1936) of over 8,000 of these objects down to apparent photographic magnitude 21 (i.e. to a distance of over 300 million light years), using the Mt. Wilson 100-in. reflector, and by Shapley of 36,000 southern galaxies, and of a theoretical study by Holmberg of 827 double and multiple galaxies. Also individual galaxies receive particular attention; e.g. Redman and Shirley's photometric study of the Andromeda nebula leads them to conclude that extra-galactic nebulae are more extensive than had been thought, and tends to dispel the idea that our own galaxy, while similar in structure to other spiral nebulae, may be above the average in size.

All such work is directed to discovering the large-scale structure of the universe. Surveys like those mentioned indicate that, to a first approximation, the galaxies show a statistically uniform distribution throughout the space accessible to existing telescopes. A second approximation indicates a small departure from this, if the classical properties of space be assumed, while it is well known that the spectral lines of these nebulae show a red-ward displacement.



These features are usually explained either by means of one of the general relativity models of the "expanding universe," which pictures the nebulae as embedded in expanding curved space, or by means of Milne's kinematical relativity, which pictures them as a dispersing cloud of "equivalent particles." Hubble, however, inclines to the view that the simple interpretation of the red-shifts as due to recessional velocities leads to untenable conclusions about the size of the universe and the density of matter in it. Most astronomers probably prefer to suspend judgment until yet more extensive data are available. (See also PHOTOGRAPHY: *Special Application*.)

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**Athletics:** see TRACK AND FIELD SPORTS.

**Atom:** see MATTER, STRUCTURE OF.

**Atom-Smasher:** see CHEMISTRY: *Atom-Smasher*.

**Auckland.** Largest city in the Dominion of New Zealand (*q.v.*); situated on the sheltered Hauraki gulf, on the east coast of the North Island; regular port of call for mail and other ships plying between Australia and North America. Pop. (1936), including Maoris: Auckland city, 102,295; total urban area, 212,159. Tonnage entered (1935): 2,307,664 tons engaged in overseas trade. Imports handled (1935): £NZ 12,136,235. Exports: £NZ 16,084,922 (including 107,529 tons of butter). At the end of 1936 and beginning of 1937, Auckland was the centre of an important strike of workers in freezing-works and cool-stores. The men demanded higher pay as the alternative to a 40-hour week. Go-slow tactics were followed by the first stay-in strike in New Zealand. The strike was settled through the intervention of the minister of labour, who persuaded the employers to increase time-wages pending arbitral review of the main issue. The outstanding event in the city's history in 1937, however, was the successful conclusion of experimental flights by Imperial Airways' and Pan-American Airways' flying-boats, with a view to making Auckland the terminus of regular freight and passenger air routes from San Francisco *via* Hawaii and from London *via* India and Australia.

**Australia, Central:** see CENTRAL AUSTRALIA.

**Australia, Commonwealth of,** a self-governing member of the British Commonwealth of Nations, situated in the southern hemisphere between longitudes 113°9' E. and 153°39' E. and latitudes 10°41' S. and 43°39' S.; capital, Canberra (Federal territory); ruler, King George VI, represented by a governor-general, Lord Gowrie, and by State governors; national flag, a blue ensign, with the Union Flag in the quarter and six white stars in the field.

**Area and Population.**—Area: 2,974,581 sq.mi.; population (March 1937): males 3,452,503, females 3,367,208, total 6,819,711; urban population (June 1933 census): 69.24%. The number of full-blood aborigines is estimated at about 55,000. The Church of England numbered (1933 census) 2,565,118 adherents; Roman Catholics, 1,161,455; Presbyterians, 713,229; Methodists, 684,022; other Christians, 603,914; non-Christians and no definite religion, 902,092. The overwhelming majority of the population speaks English, and there are only 29,738 English illiterates. Population 1935: Sydney, 1,254,780; Melbourne, 1,008,300; Adelaide, 315,130; Brisbane, 306,154; Perth, 210,365; Newcastle, 104,485; Hobart, 60,900.

**History.**—Federal Cabinet reconstruction was necessitated by

the electoral defeat, in Oct. 1937, of three ministers—Sir Archdale Parkhill (defence), Sir George Pearce (external affairs), Mr. T. C. Brennan (minister without portfolio)—by the simultaneous retirement of Mr. T. Paterson (interior) and Mr. J. A. J. Hunter (without portfolio), and by the resignation, in March 1937, of Sir Henry Gullett (without portfolio, in charge of trade treaties). The new ministry, announced on Nov. 29, was as follows: prime minister, J. A. Lyons; commerce and health, Dr. (later, Sir) E. C. G. Page (formerly commerce); attorney-general and industry, R. G. Menzies; external affairs and territories, and vice-president of the executive council, W. M. Hughes (formerly health); postmaster-general and leader of the Senate, Senator A. J. McLachlan (formerly postmaster-general and development); trade and customs, Lieut.-Col. T. W. White; treasurer and development, R. G. Casey (formerly a treasurer); defence, H. V. C. Thorby (formerly without portfolio); repatriation, Senator H. S. Foll (new minister); interior, J. McEwen (new minister); assistant ministers, J. A. Perkins, V. C. Thompson, A. G. Cameron, and Senator A. N. MacDonald.

The Australian commonwealth is a federation of six States sovereign in their own field. Amendments of the constitution must be passed by the Federal Parliament, and approved at a referendum by a majority of the votes cast and by a majority of voters in a majority of States. Amendments to extend the powers of the commonwealth in regard to marketing and to give it full powers to legislate for air navigation and aircraft were passed by Parliament and submitted together in a referendum on March 6, 1937. Both were defeated. On the marketing amendment, 1,259,808 electors voted yes and 2,214,388 voted no. The aviation amendment secured a total majority of 1,924,946 to 1,669,062, but not the required majority in four States. Uniformity of laws on civil flying was subsequently secured through the passage of similar legislation in all States.

A Federal general election was held on Oct. 23, the triennial term of the House of Representatives having expired, and the Senate seats due to fall vacant in July 1938 being filled simultaneously. The united Australia and country parties stood as a Government coalition, against the Labour party, Social Credit, and minor groups. Mr. Curtin (Labour), in his policy speech, said Australia should not be committed to warlike activities outside the commonwealth without the people's consent. She should concentrate on local, particularly air defence. Her self-reliance would be a notable contribution to the defence of the British commonwealth. He promised to "make the Commonwealth bank the nation's bank." Labour would enforce the 40-hour week and would provide £6 millions from Federal revenues for inaugurating a system of unemployment allowances. Mr. Lyons (U.A.P.) told the electors that, if the birth-rate declined further, without immigration the population would begin to fall in 20 years or sooner. On defence, Australians desired confirmation of the benefits of the imperial connection rather than isolation. The Ottawa agreement, the Government felt, required revision, and they also sought a satisfactory trade pact with the United States. They would strengthen the Commonwealth bank as recommended by the Royal Commission (*see below*). They would submit to Parliament plans for sickness and widows' and orphans' pensions affecting three million people. The States were better able to handle unemployment insurance, but the commonwealth would help. The Government, while not opposed to the 40-hour week, asked for preliminary inquiry.

The campaign was mainly concentrated on issues of external policy and defence. The result was a victory for the Government in the Lower House and a setback in the Senate.

The principal measures introduced in the Federal parliamentary session of June 17 to Sept. 15 were obliged to stand over, not



having been passed by the date of the dissolution. They included a bill to adopt the sections of the Statute of Westminster which had been left for Australia to adopt at her option, and a bill reconstituting an inter-State Commission for commerce and finance. The session was largely occupied with debates on the Imperial Conference and on the budget.

After the general election, discontent was manifested in the Labour party with the leadership of Mr. John Lang in New South Wales. Two of his chief supporters, Mr. Beasley and Mr. Rosevear, were displaced in the Federal Labour Executive by members of the opposite faction.

Great concern was aroused in Australia by the Chinese-Japanese war (*q.v.*). The Australian Government had shown its close interest in Far-Eastern affairs by proposing, at the Imperial Conference (*q.v.*) in May, a regional understanding and pact of non-aggression among the countries of the Pacific, "conceived in the spirit of the principles of the League." Considerable anti-Japanese feeling was apparent later in the year. Trade unions in South Australia and New South Wales voted for a boycott of Japanese goods, and there were other sporadic anti-Japanese demonstrations.

At Geneva, Australian representatives played a leading part in promoting an approach to world economic betterment through a study of standards of nutrition.

**Trade and Communications.**—The principal agricultural and pastoral products, with value<sup>1</sup> of output in 1935–36,<sup>2</sup> were wool, £55,186,000; beef, £14,556,000; mutton and lamb, £13,369,000; dairy products, £32,448,000; fruit, £7,702,000; eggs and poultry, £9,578,000; wheat, £29,768,000; sugar-cane, £7,493,000. Total area under crop, 1935–36, 19,974,042 acres. The output of the principal non-agricultural products was valued as follows in 1936: gold, £10,183,000; silver, £368,000; lead, £764,000; silver lead ore, concentrates, etc., £3,815,000; zinc and concentrates, £935,000; tin and tin ore, £659,000; coal, £6,663,000; ironstone, £2,172,000; forest products (net value, 1935–36), £6,808,000.

**Employment.**—The value of Australia's principal exports in 1936–37 was: wool, £62,529,000; wheat and wheaten flour, £24,362,000; meat, £10,323,000; fruits (fresh, dried, and preserved), £5,053,000; butter and cheese, £8,100,000; gold, £13,724,000; lead, £5,073,000. Total exports, including gold and silver, amounted to £126,200,000 sterling, against total imports of £90,500,000 sterling. After allowing for £22 millions sterling of interest on public debt, and for other invisibles, approximately £20 millions was added to Australia's sterling assets. The export price index reached a peak of 1,019 in April 1937 (1928=1,000). By September it had fallen to 919, but was still nearly 15% above the level of Sept. 1936.

The net value of production in the principal factory industries in 1935–36 was: iron and steel, £7,133,000; general engineering, £6,128,000; railway rolling-stock and tramcar building, £6,774,000; wool manufacture, including hosiery, £8,048,000; total clothing, including boots and shoes, £14,015,000; breweries, £4,363,000; printing, £4,732,000; total, all industries, £162,437,000.

The percentage of trade unionists unemployed fell to 9.3 in the third quarter of 1937, comparative third-quarter percentages being: 1936, 12; 1932, 29.6; 1929, 12.1. Factory unemployment, estimated at 535,000 in June 1937, was then 19% above the 1928–29 average. The estimated value of material production (gross for primary and net for manufacturing industry) rose from £405 millions in 1935–36 to £432 millions in 1936–37.

**Railroads.**—Mileage open, 1935–36: Federal, 2,145mi.; State, 24,944 miles. The Federal budget for 1937–38 included the following estimates (actual results for 1936–37 in brackets): rail-

way receipts, £480,000 (against £436,293); ordinary railway expenditure, £1,206,000 (against £1,076,077); new railway works from revenue £269,000 (against £194,000).

The total of steam and motor tonnage on Australian registers at Dec. 31, 1936, was 250,512 tons; other tonnage, 86,051 tons. The volume of shipping entered into Australian ports in 1936 comprised 4,343,118 tons under British flags and 1,894,558 tons of foreign shipping. Inter-State and coastal shipping, other than through voyages, is reserved for Australian ships.

During the 1937 Imperial Conference, the United Kingdom, Canadian, Australian, and New Zealand Governments discussed the problem of competition from subsidized American ships on the North America to Australasia routes. No final agreement was reached, but there was general assent to aiding the Canadian-Australasian line to replace its existing vessels by two new ships. The Australian budget included £10,000 to cover commitments under this head in 1937–38.

The combined net loan expenditure of all States on roads and bridges in 1935 was £1,415,000. A contribution of £3,039,530 was made to the States for roads from the Federal budget for 1936–37.

The route mileage of regular internal air services (Aug. 1937) was 17,000mi., plus 4,361mi. of the Brisbane-Darwin-Singapore link of the England-Australia twice-weekly service. The flying mileage on internal routes totalled 5 millions per annum.

On Jan. 25, 1937, it was announced that agreement in principle had been reached with the British Government on the projected London-Sydney flying-boat service, timed to begin in Jan. 1938. Australia would retain administrative and defensive control over the section to Singapore. All first-class mail from Great Britain would be carried for 1½d. (sterling) a half-ounce, but Australia would retain a surcharge of 5d. a half-ounce. The agreement was for 15 years subject to satisfaction. Introduction of the scheme was retarded by delay in constructing flying-boat bases, but on Dec. 21, the minister of defence promised that temporary bases would be ready in April 1938.

Telephone facilities were extended in 1937, especially in the country districts. Six new national broadcasting services were installed in 1936–37, bringing the total to 21. There were also 80 commercial broadcasting services.

**Finance and Banking.**—(a) *Currency and Exchange.*—The Australian pound (£A) with sub-units as in English money had throughout 1937 a value 20% below that of sterling, *i.e.* approximately 16s. In Sept. 1937 £100 (nominal) of gold cost £A207.

(b) *Budget and Taxation.*—Mr. R. G. Casey, Commonwealth treasurer, presented his 1937–38 budget on Aug. 27. The realized surplus for 1936–37 was £1,276,558, revenue being £82,807,977 and ordinary expenditure £81,531,419. Income tax produced an excess of £1,076,000, thanks mainly to accelerated payment of arrears. Of the surplus, £1 million was appropriated for post-office public works, the remainder being set against past deficits.

In view of the formidable and inescapable increases in its obligations, said the treasurer, the Government was unable further to reduce taxation. Estimated revenue for 1937–38 was £85,190,000, the main increases being in customs and excise and postoffice receipts. Invalid and old-age pensions would be raised from 19s. to £1 a week, and would cost nearly £2 millions more. The total defence provision in 1937–38, including commitments, was £11,531,000, against £8,067,000 in 1936–37. Only £6 millions (against £5,851,000), however, would be borne on the budget, £3,031,000 being drawn from two trust accounts and £2,500,000 from a loan to be raised in London. Appropriations for public works, including defence and postoffice works, totalled £12,023,330 (against £9,184,584), of which £7,721,500 (against £6,858,092) would be

<sup>1</sup> In this article, unless otherwise stated, values are expressed in Australian currency. For rates of exchange, see section herein on *Finance and Banking*.  
<sup>2</sup> The Australian fiscal and statistical year ends June 30.



provided out of revenue. Payments to the States would show an increase from £15,021,990 to £15,565,500, thanks to more liberal federal aid for roads. The railways would cost £130,000 more. Total budget expenditure would rise by £3,628,000 to £85,160,000, allowing a nominal surplus of £30,000.

The States' budgets were in deficit in the aggregate, the combined surplus for Commonwealth and States being only £965,000. The combined public debt rose by £7,090,000 to £1,262,872,000 (nominal values in sterling and Australian currency), while the public debt of the Commonwealth alone fell by £4,130,000 to £356,910,000. In June, a loan of £12,360,000 sterling was converted in London at a saving of £446,000 in interest, and one of £11,410,000 sterling was converted to a longer-term basis in November.

Banking Statistics (Third Quarter of Each Year)

	Advances and Securities	Deposits	Cash Reserves
	£	£	£
1936 . . . .	303,300,000	282,400,000	29,500,000
1937 . . . .	306,200,000	306,600,000	36,500,000

**Education** is controlled by the States, the school entry age being six or seven years, and the statutory leaving age 14. The average attendance in 1934 was: State schools, 792,892; private schools, 196,927.

**Defence Forces.**—(a) *Navy.*—The Royal Australian navy consists of two 10,000-ton cruisers and one 7,250-ton cruiser (and smaller vessels) in commission, and one 5,100-ton cruiser and one 5,000-ton seaplane-carrier (and smaller vessels) in reserve. Naval vote, 1937–38: £3,600,000, an increase of £600,000, mainly for modernizing two cruisers, improving port defences, and developing Darwin as a naval sub-base.

(b) *Army.*—Army personnel, Dec. 31, 1935: permanent forces, 1,810; militia forces, 26,270; reserve of officers, 5,625; others, 483. There is no compulsory military service. Military vote, 1937–38: £3,300,000, an increase of £1 million, mainly for coastal and anti-aircraft defences.

(c) *Air Force.*—Strength (Sept. 1937): 8 squadrons, with 96 planes. Air vote, 1937–38, including civil aviation: £3,600,000, an increase of £2,300,000, mainly for additional squadrons.

(d) *Police and Irregular Forces.*—There are no such forces organized on a military basis.

(e) *General.*—Munitions supply vote, 1937–38: £1,100,000, an increase of £500,000. Efforts are being made to increase Australia's self-reliance in munitions supply, e.g., establishment of factories to manufacture aircraft and Bren machine-guns, encouragement of production of oil from shale.

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**Australia, South:** see SOUTH AUSTRALIA.

**Australian Literature.** The output of 1937 was marked by a high level of competence rather than by any enduring achievements. Henry Handel Richardson's great trilogy, *The Fortunes of Richard Mahoney* (completed in 1929), retains its primacy in Australian fiction.

M. Barnard Eldershaw (Miss Barnard and Miss Eldershaw), brought into the front rank by *A House Was Built* (1931) and *The Glasshouse* (1936), scored another success with *Plaque with Laurel*, a novel describing a conference of literary people at Canberra. Outstanding was Helen Simpson's *Under Capricorn*, which took her back to the early settler days of 1831. *A Murder in Sydney*, by Leonard Mann, described the mind of an active and

passionate girl who had seen her father's satisfaction at her invalid mother's death, and had killed his mistress. Seaforth Mackenzie's *The Young Desire* was a novel of school and early emotional relationships. Others are Philip Lindsay, with *The Bells of Rye* and *Gentleman Harry Retires*; Mary Mitchell, with *Decline and Fall of a British Matron*. Martin Boyd's *The Picnic* dealt with the reactions of an English village to an Australian family.

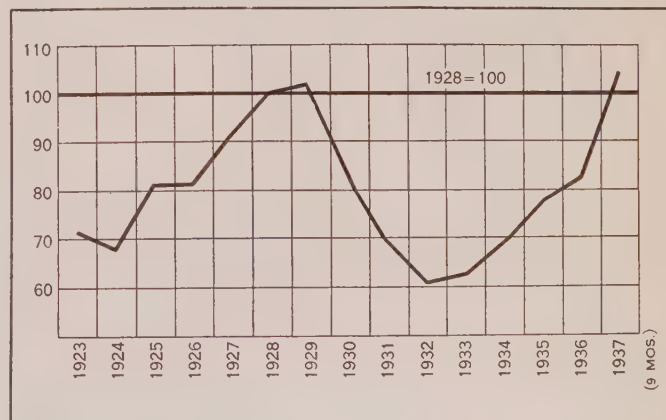
Even novels most characteristically Australian usually found their publishers and in large measure their public in Great Britain. Mention must be made of the more purely domestic products that achieved widest success in Australia itself, namely, Ion L. Idriess's *Cattle King*, the latest of a popular series by this author, including *Lasseter's Last Ride* and *Man Tracks*. *Wonders of the Great Barrier Reef*, written in good strong English by T. C. Roughley won a deserved success. Outstanding biographies were his daughter's life of the late Prof. Sir Edgeworth David, and George Mackness's life of Admiral Phillip. (W. A. M.)

**Austria,** a State of central Europe and member of the League of Nations. Bounded W. by Switzerland, N. by Germany and Czechoslovakia, E. by Hungary, S. by Yugoslavia and Italy. Capital, Vienna. President, Dr. W. Miklas. National flag, red, white, and red, in horizontal stripes.

**Area, Population, and Cities.**—Austria consists of eight provinces (Lower Austria, Upper Austria, Salzburg, Styria, Carinthia, Tyrol, Vorarlberg, Burgenland) and a mediatized city, Vienna. Total area, 32,369 sq.mi.; population (1934), 6,760,233, of whom 90.57% were Roman Catholics, 4.38% Protestants, and 2.83% Jews. Except for a few Slovenes, Croats, and Magyars, the entire population is German-speaking. Elementary education is compulsory, and is provided by the communes and provinces. Higher education is State, provincial, or private. There are three State universities. The leading cities are Vienna (*q.v.*), with a population in 1934 of 1,874,130; Graz (152,841), Linz (108,970), Innsbruck (61,009), Salzburg (40,232).

The Constitution, introduced on May 1, 1934, is corporative, on a Christian foundation. Besides the president, there is a Federal Diet (*Bundestag*), State Council (*Staatsrat*), and cultural, economic, and provincial Councils. The Federal assembly meets when required to perform certain exceptional functions.

**History.**—The active struggle between Italy and Germany over Austria's body came to an end, for the time, with the Austro-German agreement of July 12, 1936. The Government in 1937 continued its precarious balance amid many opposing forces. Internally, no event of importance occurred. An appeal by the Chancellor, Dr. Schuschnigg, to the workers did not notably alter their attitude, half-way between resentment and resignation. There was much monarchist agitation: the chancellor was sympathetic. Foreign policy remained that of maintaining Austria's



AUSTRIA: Industrial production index (*The Annalist*)



sovereignty and independence as a basis of "friendship with Italy, the truce with Germany, good relations with other States," particularly warm with Hungary. The chancellor visited Italy in the spring, but showed himself slightly more independent than his predecessor towards that country. With Germany, while the German character of the State and people was often emphasized, while also attempts were made to meet the wishes of the more advanced nationalists in Austria, and frequent negotiations conducted with statesmen in Germany, no real normalization of relations could be reached. There were endless incidents, demonstrations by and arrests of Nazi sympathizers, and complaints of breaches of the promised newspaper truce. Commercial exchanges with Germany improved much less than the agreement of 1936 had anticipated.

**Trade and Communications.**—Agriculture in Austria continues to expand, the recent decrease in values being due to the fall in world prices. After hay and clover, the largest crops are (in that order) rye, oats, wheat, potatoes, barley. The cultivation of sugar-beets has greatly increased, as has the production of milk and dairy-farming generally. Milk, cream, and butter are now exported in considerable quantities. Timber remains a most important article of export.

The production of lignite in 1936 was 2,897,000 tons; of anthracite, 244,000 tons; of iron-ore, 1,020,000 tons; of pig-iron, 248,000 tons; of steel, 424,000 tons. The production of electricity was 2,600 million kw., mainly hydro-electric. Industry suffered from very severe unemployment. The figure of applicants for work on Jan. 31, 1937, was 407,475; on April 30, 330,095. The number of employed in March 1937 was 922,000, against 1,449,000 in 1929; the index of industrial activity for 1936, 90 (av. 1925-29, 100).

Both imports and exports have risen substantially from the lowest level. The figures, in millions of gold dollars, are:

	1929	1934	1935	1936
Imports . . . . .	459.0	126.9	134.3	139.1
Exports . . . . .	307.9	94.4	99.6	106.1

The monetary unit is the schilling, nominally 14.07c., but standing in 1936 at an average of 79% of its nominal value. The budget for 1936 showed a revenue of 1,282 million schillings and expenditure of 1,303 million schillings. The deficit of 21 million schillings was much smaller than that of any year since 1930, except 1932. Budget estimates for 1937 were: revenue, 1,342.1 million schillings; expenditure, 1,399.8 million schillings.

**Defence.**—Since denouncing the military clause of the Treaty of St. Germain on April 1, 1936, Austria has maintained compulsory military service for all males between the ages of 18 and 42. In 1936 the budgetary effectives were 1,362 officers and 35,160 other ranks. In Jan. 1937 it was decided to form the "Front-Militia" (the patriotic pan-military organization, voluntarily enlisted, standing behind the chancellor) into the reserve of the army.

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**Autobiography:** see AMERICAN LITERATURE; ENGLISH LITERATURE; FRENCH LITERATURE.

**Autogiro:** see AVIATION, CIVIL: *Special Aircraft*.

**Automobile:** see MOTOR CARS; MOTOR TRANSPORTATION.

**Automobile Racing.** Captain George E. T. Eyston of England broke the world land speed mark over a measured mile on the Bonneville Salt Flats in Utah, U.S.A., driving his racing car "Thunderbolt" over the distance

at an average speed of 311.42 miles per hour. This easily shattered the previous record of 301.1292 miles an hour set on the same flats in Sept. 1935, by Eyston's compatriot, Sir Malcolm Campbell. Captain Eyston, prior to setting the new world speed mark, also broke three other standards—the 3,000 kilometres, 12 hours and the 2,000 miles. His average speed for the 2,000 miles was 163.75 miles an hour; his new mark for the 12-hour run was 163.68 m.p.h. and for the 3,000 kilometres, 163.49 miles per hour.

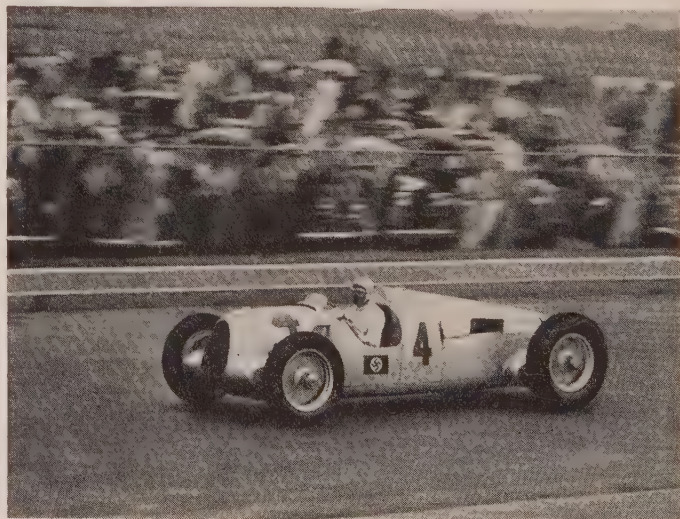
Wilbur Shaw of Indianapolis, Indiana, U.S.A., won the annual 500-mile Indianapolis auto racing classic, finishing first by the margin of an eyelash. Shaw drove his Shaw-Gilmore Special to victory over Ralph Hepburn of Los Angeles, who placed second. The time margin was 2.16 seconds. Shaw's time for the long grind set a new record for the speedway. He covered the distance in four hours, 24 minutes, 7.81 seconds, doing an average speed of 113.580 miles an hour. The previous average speed mark, set by Louis Meyer in 1936, was 109.069 miles per hour.

At the newly constructed Roosevelt Raceway in Westbury, Long Island, the second running of the revived Vanderbilt Cup race saw a German representative shoot to the fore. Bernd Rosemeyer, German champion, drove his rear-motor Auto Union to victory by the slim margin of 51.03 seconds over his nearest pursuer, Richard Seaman of England. Rosemeyer covered the ninety laps in three hours, 38:00.75 minutes at an average speed of 82.564 miles an hour. These figures bettered those of Tazio Nuvolari, the Italian racer who won the classic last year, by about 17 miles an hour. The first American car to finish was in sixth place, Russ Snowberger driving his Burd Piston Ring racer.

(T. J. D.)

**Aviation, Civil.** The regular air traffic has developed steadily. About 150 companies operated public air lines during 1937 in the whole world, including the operation of feeder services. Only about 25-30 of these companies have any international importance. The United States has about 24 air services (6-7 major ones) and Great Britain and Ireland have about 17 operating transport enterprises (2 major ones). The majority of the bigger air transport concerns are national enterprises partly or wholly owned by Governments and very often directed by Government officials as well.

**Commercial Development.**—An important development of commercial aviation has been the introduction of the "All-by-Air" mailing system for a number of international air lines. By this



BERND ROSEMEYER, Nazi racing driver, winning Vanderbilt Cup Race and more than \$20,000 at Roosevelt Raceway, Long Island, New York, July 5, 1937





THE "THUNDERBOLT," driven by Captain Eyston breaks the world's record with 311.42 miles per hour over a mile course on the Salt Flats, Bonneville, Utah

system all first-class mail is transported by air, usually with a restriction of the weight limit for a single letter, but without any special "Air Mail" labels, surcharges, etc. This system has already been introduced for the British mail to and from most Continental countries, to South Africa, for the mail between Holland and the West Indies, for some German lines and other scheduled routes as well.

The Pacific ocean has been conquered and many air liners have crossed the Atlantic. A big step towards the creation of a regular transatlantic air route connecting England with the United States was taken during 1937 by means of a number of successful experimental crossings on the northern Atlantic route to Newfoundland. These experimental flights were carried out by Imperial Airways and Pan-American Airways using normal transport flying boats.

The main difficulty of the important route between Europe and North America is the meteorological conditions encountered over the Atlantic. Knowledge of Atlantic weather seems still too restricted for a regular operation of a traffic schedule over such a long crossing. The experience gained jointly by Imperial Airways and Pan-American Airways during the summer of 1937 between Ireland and Newfoundland and between Bermuda and New York is therefore of special value. These experiments are being con-

tinued. The planes used have been four-engined flying boats. Bigger flying boats are in preparation in England and in the United States for the continuation of this service.

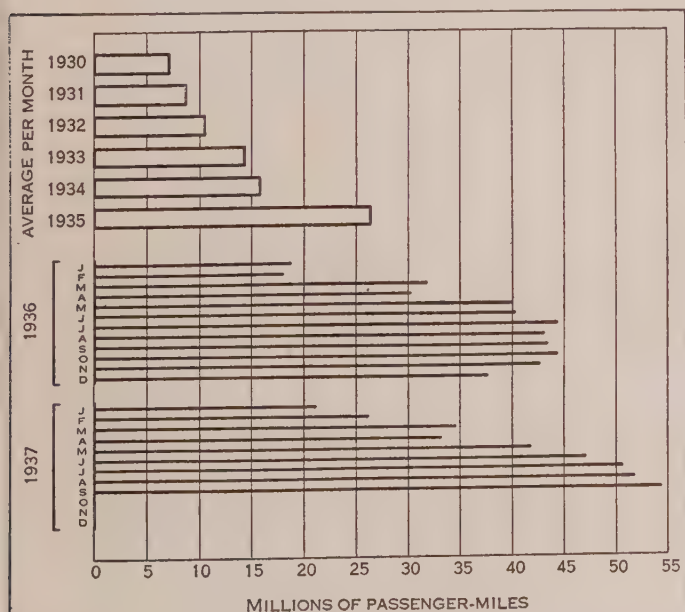
On the southern Atlantic route to North America via the Azores and Bermuda, the Deutsche Lufthansa has been operating experimentally with the help of catapult-carrying depot ships. These special ships are stationed at suitable points along the route and handle mail-carrying seaplanes. At present four of these ships are in service. The catapults are capable of launching aircraft of 17 tons all up weight. German passenger air services across the Atlantic will be continued with airships as long as no large aircraft are ready which can make the journey comfortable from the passengers' point of view and on a paying basis. For mail-carrying purposes both float planes and flying boats are being used.

The Atlantic route to South America is over a much shorter sea route, and is therefore a scheduled route. The French company, Air France, and the German company, Deutsche Lufthansa, compete with one another. A recent experimental flight with a four-engined land plane, capable of flying at 200m.p.h., from Paris over Dakar, Natal, Buenos Aires to Santiago (7,862mi. in 59hrs. with only 52hrs. flying time) seems to indicate that landplanes may be used for the Atlantic crossing as well as seaplanes or flying boats. The French service to South America is weekly.

Of special interest have been Russian experiments on a transpolar route from Europe to North America. Trial flights undertaken during 1937 were based on the results of a careful meteorological observation in the Arctic. The Russian floating meteorological observation station established on the ice near the North Pole has secured valuable information for a future air line across these regions.

The size of modern air-line operating companies is already considerable. In the United States, one of the biggest concerns, Pan-American Airways (P.A.A.) operates nearly 50,000 route miles with 224 airports, 138 ground radio-control and 124 meteorological stations, employing about 4,500 people and 150 modern air liners. P.A.A. established the service from California to China across the Pacific ocean, and the services between the United States and South America. The next extensions will be the air line across the northern Atlantic, and a service between the United States and Alaska. Large transatlantic flying boats for 100 passengers and a crew of 16 for 5,000mi. range are under construction. Trips round the world by air for a fare of £450 (\$2,255) are scheduled, taking 28 days including several days to be spent in cities along the route.

Private transport aeroplanes are coming more and more into use. Mining and other companies in all parts of the world operate freight-carrying aeroplanes, survey planes for land exploitation, oil pipe-line control, high-tension wire grids, and business



TRAVEL BY AIR in the United States: passenger-miles flown on scheduled airlines



executives are provided with their own passenger planes by their firms. Transport planes for the safe and quick distribution of valuable or perishable freight (press photographs, film pictures, gold and jewels, newspapers, flowers, fruits and vegetables, pharmaceutical drugs, etc.) are rapidly increasing in numbers. One special charter flight across the Atlantic for £40,000 has been accomplished for the transport of coronation films and press photographs between the United States and England.

Private passenger aeroplanes for air touring are not yet as common as private transport aircraft. This is due to the expense and the scarcity of aerodromes and licenced landing-grounds, but more largely to the fact that the piloting of an aeroplane still needs considerable skill and training. The progress of light and ultra-light aeroplanes has not been as rapid as might have been with the restricted market. The ultra-light aeroplane (about up to 40h.p. for a single-seater and up to 70h.p. for a two-seater) is well represented in the United States and seems to have given satisfactory results under a subsidy scheme in France, where during the first nine months of 1937 not less than 34,714hrs. have been flown and thousands of pilot certificates have been obtained.

**Technical Development.**—Generally speaking the technical progress in civil aviation has remained restricted to improvements of transport efficiency. Cruising speeds of 200m.p.h. are by no means exceptional today. Only five years ago top speeds of 125m.p.h. were considered good. Aero-dynamical improvements and progress in power plane development largely contributed to this rise in speed.

In spite of increased engine powers and pay loads, the modern air liner has not grown much in size, the wing becoming more heavily loaded than with earlier models. This trend to high wing loadings has caused the stalling speeds to rise, and the general aerodynamical refinement resulting in decreased air resistance has caused the gliding angles to become flatter. Despite the new general use of air brakes, flaps and slots, variable pitch propellers, supercharged engines, etc., the modern air liner has become more and more difficult to handle. The assisted take-off for heavily loaded high-speed commercial aeroplanes has been studied in England in connection with transoceanic services. An experiment now undertaken by Imperial Airways in collaboration with Short Brothers is the Mayo "composite aircraft," consisting of two planes coupled together for the take-off. The lower component of the arrangement at present under test is a lightly loaded big flying-boat. This lower component carries during take-off and initial climb the fully loaded transport seaplane which has to be started. The upper component to be released from the lower component is a four-engined float seaplane, the floats of which are resting in cradles mounted on the wing of the flying-boat. The pilots of both aircraft are in telephonic connection with each other while the upper seaplane is attached to the lower one. As the catch connecting the two aircraft during flight is released at a certain height, the upper seaplane is lifted away from the flying boat. (See also AERONAUTICS.)

The refuelling of commercial aeroplanes during flight by means of a tanker aeroplane offers possibilities of a take-off with a small fuel load only and would permit economical non-stop distance flights with pay loads. "Truck-launching" is another proposal for the assisted take-off. That means catapulting aeroplanes from a permanent way by means of a carriage provided with a turntable, on top of which the aircraft is resting.

The main problem of approach and landing has not yet been brought to any new solution, the speed ranges obtainable being not greatly improved against those of eight to ten years ago. Air brakes giving an increase of drag to steepen the glide, slots and flaps which not only steepen the glide but decrease the stalling speed by producing additional lift, are in common use with mod-

ern air liners. Wheel brakes are shortening the run after the touching down, and permit an effective control on the ground. The next step already incorporated in some air liners under construction is the three-wheel undercarriage with a steerable front wheel under the nose of the fuselage and the rear wheels arranged behind the centre of gravity of the aeroplane. Its advantages are the superseding of the "three-point landing" often followed by bouncing, and the stability on the ground during cross wind starts and landings. Retractable undercarriages as a means for reducing the drag are commonly used today.

Improvements in modern air liners concern the introduction of the automatic control or "gyropilot," an ingenious apparatus incorporating gyroscopes which steer an aeroplane automatically on a steady course at a given height and direction. This kind of control has proved especially valuable for blind flying and for long-distance flights. Progress in navigational means for blind approach and blind landing cannot, however, stand comparison with the aeromechanical improvement realized during the last years. In poor visibility landing is practically still largely unsolved. The Lorenz ultra short wave approach system, which defines the gliding path to be followed into the aerodrome, is in an advanced stage and holds out great possibilities. Modern wireless direction-finding apparatus still suffers from night effect and static trouble. Commercial aircraft crossing the sea over longer distances therefore prefer to rely on celestial navigation. A Telefunken device for combating the night error is under service trials. Screened and static-proof aerials are being introduced protecting against icing-up and static disturbances.

Electric discharges during flight are now more often experienced, due to the increased flying practice. Usually the effects are not serious, and remain restricted to shocks and damage done to wireless sets, but there is still the suspicion that certain very serious accidents, which are otherwise inexplicable, might have been caused by this reason. Ice accretion still remains a serious trouble. Ice prevention devices (de-icers) on wings, tailplanes, and airscrews are common with American and French aeroplanes. Imperial Airways and K.L.M., the Royal Dutch Air Line operators, are experimenting with ice-deterrent substances. Ice warnings are now issued by meteorological stations, and have been of great help to civil aviation. The operation of air liners at great heights near the stratosphere seems to become a practical proposition. This over-weather flying needs a special equipment which is now being developed by the American industry. The aeroplane must have air-tight cabins, for passengers and crew, supercharged to a pressure of about 6lb.-sq.in. for flying in a height of 20,000ft., getting fresh air and oxygen supply; care has to be taken to deal with temperature effects in the structure. The power plant has to be equipped with two- or three-stage compressors giving normal pressure in the intake manifolds. The advantages of flying at great heights are the very high speed obtainable, the fairly regular winds, the absence of gusts and ice accretion, and finally the possibility of celestial navigation under all weather conditions.

Serious problems are presented by the airscrew for big commercial aircraft. The variable pitch and especially the constant-speed airscrew have become a necessity for reasonable take-offs and good efficiencies at cruising speeds. The two-position controllable pitch airscrew is now being superseded by the constant-speed variety which eliminates adjustments by the pilot and which gives a gain in cruising speed efficiency. The mechanical difficulties inherent to variable pitch systems may be considered as overcome. But the trend to bigger engine units (from 1,400h.p. to about 3,000h.p.) in connection with gearing down, leads to airscrews having a big diameter and fairly high top speeds. This will mean an increase of airscrew-weight up to a considerable





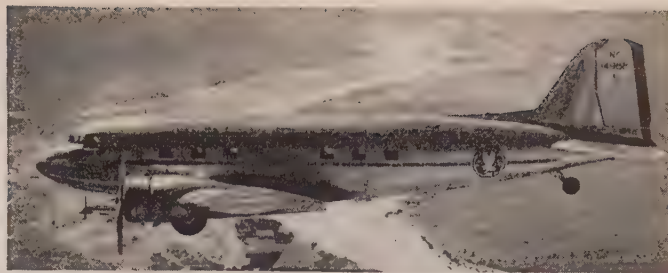
THE SHORT-MAYO COMPOSITE AIRCRAFT in flight. The upper and smaller craft is released in the air, being too heavily loaded to rise unaided



SIXTEEN-PASSENGER PLANE used by Air France



TESTING A PILOT'S SKILL with a Link Trainer, which reproduces actual flying conditions



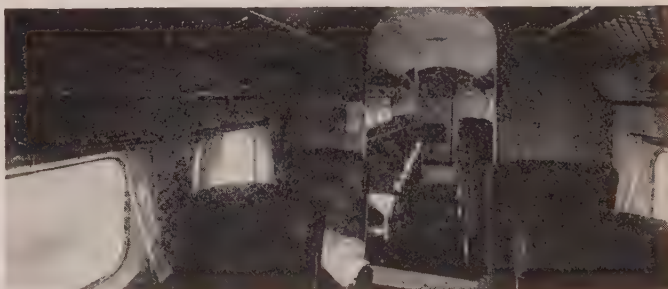
An American Airlines "SKYSLEEPER" passenger plane



A TWENTY-ONE PASSENGER T.W.A. airliner



INTERNATIONAL AIRLINER "Albatross" on trial flight



INTERIOR OF THE BLOCH 220 twin-engine monoplane



WITHOUT WINGS, the Arrowbile's motor drives the car's wheels instead of the propeller



THE TAILLESS ARROWBILE IN FLIGHT. The machine is an attempt to develop a handy, popular, low-price aeroplane that can be kept in the owner's garage



THE ARROWBILE, a combination automobile and aeroplane, is driven into a hangar to be converted from motor car to flying machine by attaching wings



percentage of the whole plant weight and lowered efficiencies due to high top speeds. The protection against ice-accretion is still another insufficiently solved problem. Wooden blades, now considered obsolete except for small aircraft, may again be favoured because of their lower weight.

Important development work has proved its value for the comfort of passengers. Sound-proofing of cabins is common today, and controllable ventilation and heating. Adjustable seats facilitate travelling over long distances. Sleeper berths for night flying are not exceptional. Oxygen supply for passengers and crew of planes crossing high mountains is provided for.

Metallic materials (steels and light alloys) are used for the main structure of most air liners, while for small aeroplanes a mixed wooden-metallic construction is still preferred. One remarkable exemption is the four-engined de Havilland Albatross monoplane built for long-distance experiments of Imperial Airways. This modern air liner shows a refined wooden construction. Plastic materials (thermo-setting synthetic resins) may become important for structural parts as well.

The progress in power plant construction does not appear so obvious as the aerodynamical refinement. But there has been a steady improvement in aero engine design. The reliability and life of a modern aero engine have become astonishingly high. One engine extensively used for feeder line aeroplanes, the de Havilland Gipsy Major, is now officially permitted to run for 1,000 hrs. between overhauls. Only a few years ago the interval was 75 to 200 hrs., even for engine types which were reputed as reliable. The power developed has been pushed up by increased compression ratios (due to fuels proving a higher octane number), increased engine speeds, raised intake pressures (supercharger boost), and improved cooling of cylinder heads. Every engine installation is now provided with air ducts for the effective transmission of heat on radiators and fins. The research in anti-knocking fuels has played a big part in the general development. Fuels with an octane value of 100 (the octane value is a comparative figure stating the anti-knocking qualities) are under service tests, and those with 110 octane value and more are in preparation. A few years ago the average octane value was about 70.

Nearly all commercial and civil aircraft in the United States, Great Britain, Holland, and Switzerland are equipped with air-cooled engines, only Germany and France using liquid-cooled engines. The compression ignition engine (Diesel system) is only to be found on German air liners. The fuel consumption of the compression ignition engine is reputed to be low, and several German long-distance flights with Junkers Diesel engines seem to have proved it. But it may be pointed out that in fuels of a very high octane value, permitting high compression ratios without detonation, similar thermal efficiencies are obtainable with the gasoline engine.

The output of a cylinder is restricted by the heat conduct, and in this respect the cooling of exhaust valves is limiting the further progress. Sleeve valves help to overcome this difficulty, and air-cooled Bristol radial engines incorporating this principle have done extremely well. The future may show the sleeve valve air-cooled radial in competition with the liquid-cooled compression ignition engine for air liners. For small civil aeroplanes, air-cooled engines of the four- and six-cylinder in line type are dominating.

One of the most serious problems which still has to be solved is that of fire prevention. Crashes with modern high-speed aeroplanes are often followed by fire, the cause of which is not known in most cases. The only fact which is quite obvious is that fuel vaporized by the impact of the crash is ignited while mixed with air, explodes, and starts the fire. The most effective prevention seems to be the use of fuels which are less likely to form ex-

plosive mixtures while vaporized. Most heavy fuels used for compression ignition engines should satisfy this requirement. But the Diesel engine still seems to be far from being equal to the modern gasoline engine, even if the omission of electrical ignition is regarded as an additional factor.

**Airships.**—The commercial use of airships has remained restricted to Germany, in spite of the excellent results. The "Hindenburg" airship was laid up during winter months, and underwent modifications resulting in 20 additional passenger cabins, bringing up the total to 70 passengers. The use of Blaugas as part of the fuel was discontinued. The airship which had made so many successful trips across the Atlantic met with a terrible disaster on May 6, 1937, at Lakehurst, while landing shortly after a thunderstorm. In spite of this disaster Germany decided to continue the airship service. But the use of hydrogen which has been responsible for most airship accidents is now banned, and the new "L.Z. 131" under construction is being modified for a filling with helium. Helium gas means a certain loss in lifting capacity, but it is not inflammable.

**Special Aircraft.**—Gyroplanes, *i.e.* aircraft producing lift by revolving wings, have made good progress, but can still only be considered as being in the experimental stage for scheduled air transport. The Cierva "jump start" autogiro has been successfully demonstrated. The Hafner gyroplane has shown an exceptionally good manoeuvrability. The German Focke helicopter has made cross-country flights of 50 mi. length, and is at the present holding all world's records for helicopters. (See also GASOLINE; UNITED STATES: *Aviation*.) (A. R. W.)

**Aviation, Military:** see AERONAUTICS; AIR FORCES; MUNITIONS OF WAR; AIRCRAFT; REARMAMENT.

**Azana, Manuel** (1880— ), Spanish statesman and jurist born at Alcalá de Henares; studied at Madrid and Paris, became a barrister and, while a lecturer at Madrid University, contributed widely to the home and foreign press. He specialized in military subjects, was vehemently opposed to Primo de Rivera's dictatorship, was a strong anti-clericalist, and in 1930 joined the revolutionary committee which paved the way for the Republic. Arrested and imprisoned, he was released (April 1931) on the proclamation of the new régime, and, as Minister of War in the first republican ministry, quickly reduced armament expenditure. On Zamora's resignation (Oct. 14, 1931) he became provisional president, and in the following December president. His reforming zeal in social, military, religious, and educational spheres occasioned the opposition of both conservatives and radicals, and his ministry was marked by uprisings of Catalans, monarchists, and anarchists; in June 1933 he reorganized his cabinet, but resigned in September, being succeeded by Lerroux. In 1934 the Catalan rebels nominated him head of their proposed provisional Government, but he was arrested and imprisoned for 10 weeks (October–December); in March 1935 he was again arrested on the accusation of having rendered assistance while in office to Portuguese revolutionaries, but the charge was allowed to drop, and on May 10, 1936, he succeeded Zamora as president of the Republic. During the Civil War he was forced to move from place to place with the Government, and used his best endeavours to restrain extremist groups. (See also SPAIN; SPAIN, CIVIL WAR IN.)

**Azerbaijan S. S. R.** A Soviet republic, a member of the U.S.S.R. (*q.v.*), in Eastern Transcaucasia on the Caspian sea, bordering N. on Georgia and Daghestan, W. on Armenia, and S. on Iran. The capital is Baku, the oil metropolis; and the national flag has a red ground,



with a gold sickle and hammer and initials top left corner. The leading cities, with 1936 population figures, are: Baku 702,000, Kirovabad (formerly Gandzha) 90,700, Nukha 30,900.

**Area and Population.**—Area: 86,000 sq.km. Population (1933): 2,891,000 (rural 1,921,000, urban 970,000), comprising about 20 nationalities altogether, with 63.3% Turkish, 12.4% Armenians, and 9.7% Russians. The chief languages are Azerbaijani, Armenian, and Russian. The total number of pupils attending schools (1936–37) was 549,000, and there are 13 higher educational institutions with 11,000 students, and 87 research institutions.

**History.**—The Ninth Extraordinary Azerbaijan Soviet Congress, sitting in Baku, adopted on March 14, the new Constitution of Azerbaijan, which thenceforth belongs directly to the U.S.S.R. as an equal, independent Union Republic. The Azerbaijan S.S.R. includes the Nakhichevan Autonomous S.S.R., the Nagorno-Karabakh Autonomous Province, 50 districts, and the capital Baku. About ninety-six per cent of the population took part in the elections to the Supreme Council of the U.S.S.R. on Dec. 12.

**Trade and Communications.**—Sown area (1936): 4,318 square miles. In 1937, 86.5% of peasant households were collectivized. The chief products are cotton, rice, fruit (especially grapes), and, in the south, tea, citrus, and silk. Stock breeding (especially horses) is an important activity. It is the chief oil territory of the U.S.S.R., and also has iron strata. The output of industry (1936—at prices 1926–27) was 2,054 million roubles. There were, in 1936, 847km. of railways. (S. YAK.)

**Backward Children.** The term backward child is gradually disappearing. The principal uses of the expression have been in connection with school achievement and in intelligence. In school parlance, a child is backward when he is two or more years behind the grade he should be in. In intelligence, the term is sometimes used to indicate a child whose I.Q. is between 80 and 90. This, however, is not standardized. In popular usage, it is often a euphemism for feeble-minded. Otherwise it is a general expression for all cases that for any reason do not seem to be up to expectation.

We have now learned that the backward child (in this latter sense) is generally a discouraged child. The discouraged child makes no effort to achieve. Impatient teachers scold and threaten him, call him a dunce or tell him he is stupid until he thinks it is no use to try to please them. Sometimes it is a physical handicap which no one has taken the trouble to discover and remove, such as adenoids, crippled condition, poor nutrition, poor home, poor clothes and other conditions that destroy a child's self-respect and interest in life.

Parent-teacher associations, guidance clinics, school counselors, school nurses, visiting teachers and, best of all, the elimination of the scolding, nagging teacher, all are contributing to prevent discouragement and reduce the number of backward children. Slow children, there will always be; but as long as they are not feeble-minded they need not be called backward any more than the adult should be called backward who does not work as fast or achieve as much as some other adult. (H. H. Go.)

**Bacon.** Sliced bacon to the amount of 219,541,363lbs. was produced in the U.S. in 1937, an increase over preceding years that evidenced both the growing popularity of this form of bacon and the ingenuity in new styles in packaging the product temptingly. This figure, from the U.S. meat inspection service, is believed to represent 95% of the sliced bacon produced in the U.S. in 1937. It also represents roughly close to 65% of the smoked bacon produced in the U.S., according to an informed staff member of the *National Provisioner*. The number of hogs

slaughtered in the U.S. in 1937 was 31,642,000. Average production of bacon is about 25lbs. to the hog. On this basis bacon production in the U.S. in 1937 totalled approximately 790,000,000 lbs., including sliced, smoke-cured bellies and dry-salt cured.

Improvements in curing have been developed by packers to prevent rancidity in sliced bacon. Experiments at the University of Illinois have demonstrated that flour made from oats counteracts rancidity.

Approximately 2,000,000lbs. (1,916,800lbs. for the first eleven months) of bacon was exported by Canada to the U.S. in 1937. This included the usual types of smoked bacon and also the all-lean "Canadian" bacon which has gained popularity in the U.S. in recent years and which is officially termed "Canadian style" bacon by the U.S. meat inspection service. There is confusion in the terms signifying bacon in different countries, and "Canadian" bacon, which is made from loins, is much different from U.S. bacon which is made from bellies. The importation of 2,000,000 lbs. of Canadian bacon into the U.S. was part of the year's pork importations, which, for the first time in history, exceeded exports of pork from the U.S.

Despite the contention of Canadian growers that Dominion bacon is second to none, Danish bacon continues to rank first in popular favour in the United Kingdom. U.S. bacon does not compete against either the Danish or the Canadian in the British market because it is of a fatter type. While swine breeding in the U.S. has produced bacon-type pigs they are still nearer to lard-type swine than are the Danish and Canadian pigs which are grown primarily for bacon and ham, lean meat. (S. O. R.)

**Bacteriology.** Amongst the new species described in 1937, the sulphur bacteria are represented by *Thiospirillum pistiense*, a thermophilic, autotrophic sulphur oxidizing organism found in hot springs. Bacteria of this type grow at abnormally high temperatures and do not use organic substances for food. *Bacillus thiocyanoxidans*, which could oxidize thiocyanates to sulphates, was isolated from gas-works liquors. *Proteus melanovogenes*, a soil and manure organism, was found to be responsible for a black rot of imported eggs.

Several new plant pathogens have been described. Amongst these the following caused leaf-spot diseases: *Bacterium flavozonatum* (Begonia), *Phytomonas lactucaescariolae* (wild lettuce), *Phytomonas primulae* (Primula), *Phytomonas geranii* (Geranium), and *Bacterium tardicrescens* (Iris). *Phytomonas fabae* was found to be the cause of a black stem rot of *Vicia faba*, and *Bacterium pseudotsugae* produced galls on Douglas Fir. New animal pathogens included Gram-negative cells, less than half a micron in diameter and considered to be intermediate between the viruses and the bacteria, causing mouse catarrh and fowl coryza. *Serratia anolium* caused tumours in lizards. Four new species of *Salmonella* (typhoid and paratyphoid bacteria) were recorded.

Concerning the growth of bacteria, the gamma rays from radium were shown to inhibit cell division but not increase in cell volume in *Bacterium coli*, so that long filaments resulted. Pimelic acid, nicotinic acid, and  $\beta$ -alanine were all necessary growth factors for the diphtheria bacillus. Uracil was essential for the growth of *Staphylococcus aureus* in the absence of oxygen, whilst nicotinic acid and vitamin B<sub>1</sub> were required for the aerobic growth of the same organism. The V factor necessary for the growth of *Haemophilus parainfluenzae* could be replaced by purified codehydrogenases. These are activators of the dehydrogenase type of enzyme, namely, enzymes catalysing the removal of hydrogen from organic substances. Lactic and propionic acid bacteria also required growth factors. Nutrient broth has been shown to contain substances which inhibit toxin production by *Staphylococci*



and sporulation by *Bacillus subtilis*. These substances could be removed by adsorption on cellophane and charcoal respectively. From the Crown Gall organism, *Bacterium tumefaciens*, a complex endotoxin capable of producing tumours in sunflowers has been extracted. This organism also produces  $\beta$ -indolacetic acid, which itself can cause tumour formation in a number of plants.

The bacteriorhizas (mixed bacteria closely associated with roots) of various seedlings have been shown to stimulate the germination of seeds, and by the use of strains of bacteria capable of dissolving fungi the incidence of fungal disease in seedlings has been reduced. The root secretions of maize and wheat have been found to inhibit the growth of the nitrogen-fixing organism *Azotobacter*. Also, the secretions from pea roots exerted a deleterious influence on beneficial soil bacteria. Finally, a protein possessing the properties of Bacteriophage, the mysterious and apparently living agent which causes the destruction of bacteria, has been isolated. This protein had a molecular weight of 500,000, and was active in the incredibly small dose of one million millionth of a milligram. (S. E. J.)

## Badminton.

Badminton suffered a great loss during the year in the death, on Nov. 28, of Mr. F. W. Hickson, a tireless Hon. Secretary of the Badminton Association for 10 years. The position is now filled by Mr. D. L. H. Mercer, the well-known Hornsey cricketer.

The steady growth of the game was maintained during the past year, the latest figures showing that in England alone there are 1,229 affiliated clubs.

The playing side of the game suffered a loss, too, when Miss Thelma Kingsbury, the ladies' singles champion and joint holder, with I. Maconachie of Ireland, of the mixed doubles title, became a professional, and followed so many of England's best professional players to the U.S.A. and Canada.

The reigning open champion is R. C. F. Nichols, who, in partnership with his brother L. Nichols, also won the men's doubles title. The ladies' doubles title went to Mrs. Uber and Miss D. Doveton. Cambridge won the University match for the eighth consecutive year, while the county championship also followed the usual course and was won by Middlesex. It is hoped to organize a second-team Inter-County championship.

Recent rule changes have been mostly of a superficial nature. Throughout the rules the word "point" is now substituted for the word "ace." For the purposes of ladies' singles matches, when the score is 9-all, the game may be "set to 3" (formerly the number was "5"), and at 10-all the game may be "set to 2" (instead of "3"). This change was made with a view to increasing the popularity of ladies' singles contests.

## Bahamas,

a British colony and island group east and south-east of Florida; language, English; capital, Nassau (pop. 19,756); governor, C. C. F. Dundas; area, 4,404 square miles. Population, 59,828 (1931 census); (official estimate, 1936) 66,219. The Government is administered by an appointed governor and legislative council and an elected assembly. The chief events of note in 1937 were the appointment, in May, of C. C. F. Dundas as governor, succeeding Sir Bede Clifford, and a spectacular and serious riotous outbreak on Great Inagua, the most southerly island, in August, during which one person was killed and 15 deported by the rioters. Five steamship lines call regularly at New Providence, and semi-weekly air communication (daily in winter) is maintained with Miami. In 1936, imports were £967,240, principally from the United States (42.9%), Great Britain (24.6%), and Canada (13.4%); exports were £142,104: United States (36.8%); Canada (24.1%); and Great Britain (16.5%). The "unfavourable" trade balance was offset by a

## BADMINTON—BALANCE OF TRADE

growing tourist trade, valued at £1,000,000 annually, and increasing real estate investments. Principal export commodities were sponges (38.5%), fresh tomatoes, especially to Canada (19.3%), hemp (10.5%), and lumber (8%). These commodities and fish for local consumption, with an annual catch estimated in value at £22,500, were the chief products. The monetary unit is the pound sterling (\$5). Colonial revenue for 1935-36 was £453,310, and expenditures, £426,909. In 1936 there were 166 elementary schools (enrolment, 14,734), an industrial school, and five secondary schools. Approximately 5% of Government expenditure was for education. (L. W. BE.)

## Bahrein Islands,

in the Persian gulf, are under the protection of Great Britain. During 1937 there was a steady increase in agriculture and in trade. Artesian wells were sunk to provide ample water in the towns, and for land which had previously been uncultivable. The Bahrein Petroleum Company opened a refinery in December capable of producing 25,000 bbls. a day; and a causeway, one and a half miles long, between Manamah, the capital, and Muharra, the adjacent island, has been completed except for one bridge.

## Baker, George Fisher

(1878-1937), American financier, who inherited a fortune of \$60,000,000 from his father in 1931 and since then had been chairman of the board of the First National Bank of New York. He was a director of a number of the largest American corporations, such as the American Telephone and Telegraph Company, General Motors Corporation, the United States Steel Corporation, and the New York Central Railroad Company. He was born in New York city, March 19, 1878, and received his A.B. degree from Harvard in 1899. He died, May 30, 1937, in Honolulu after an operation.

## Baker, Newton Diehl

(1871-1937), U. S. lawyer who served as secretary of war during the World War, was born at Martinsburg, W. Va., Dec. 3, 1871. An account of his services as secretary and as solicitor and mayor of Cleveland, Ohio, may be found in the *Encyclopædia Britannica*, vol. 2, p. 944. With the end of the Wilson administration in 1921, he returned to Cleveland where he became known for his legal services for large corporations. In 1928 he accepted appointment to the Permanent Court of Arbitration at The Hague in the hope of forwarding peace. His public services became even wider after he received a Distinguished Service medal in 1929 for his war work. He headed the National Crime Commission, accepted membership on the National Law Enforcement Commission, was the recipient of numerous awards for public services, led the national committee for the mobilization for human needs during 1931-33, and was re-appointed to The Hague in 1935. A prominent candidate for the Democratic presidential nomination in 1932, he worked on early New Deal labour committees but became critical of such measures as the TVA, supreme court changes and the Wagner Labor Relations Act. His death occurred in Cleveland, Dec. 25, 1937.

## Balance of Trade.

The course of national balances of payments in 1937 was affected by a number of general factors; the rapid rise of world prices for raw commodities in the first four months of the year and their subsequent decline; the accelerated internal economic activity of manufacturing countries, especially under the stimulus of expenditure on arms; the efforts of certain countries to reduce their dependence on imported raw materials; the higher level of shipping freights as world trade expanded faster than the available



tonnage; the wars in China and Spain, and other political disturbances. Currency movements seem not to have played as great a part as in earlier years; nor was there, in 1937, any outstanding migration either of long-term or of short-term capital.

**United States.**—Both imports and exports of the United States showed a big increase. Retained imports, from a monthly average of \$202 millions in 1936, rose to \$296 millions in March. Higher prices and increased consumption both contributed to this movement. Exports increased from a monthly average of \$201 millions in 1936 to \$285 millions in May 1937. Both sides of the account then receded, but exports returned seasonally to a high figure in the autumn. Exports from January to September totalled \$2,238 millions, against imports of \$2,370 millions. In the same period there was a net import of \$1,455 millions of gold. This was not the counter-part of a long-term capital movement; the net inward movement was only \$231 millions to June 30, and in later months capital left the United States. To that date, however, there had been a net inflow of \$708 millions of banking funds, enough to balance two-thirds of the payments for gold.

**United Kingdom.**—Imports into the United Kingdom continued to expand, despite falling prices, from a monthly average of £65,710,000 in 1936 to £91,945,000 in Nov. 1937. Exports also increased, but not in such large measure; the debit balance of trade for the first 11 months of the year was £387,208,000 in 1937 against £311,022,000 in the same period of 1936. It was estimated that roughly £30 millions of the increased debit would be covered by higher shipping earnings (yielding £95 millions in 1936) and roughly £20 millions by bigger dividends on investments abroad (yielding £195 millions in 1936). As there was a simultaneous net import of about £80 millions of gold, Britain's liabilities to the outside world were plainly increasing faster than her external assets.

**Gold Bloc.**—The effect of devaluation on France's balance of trade was not, as might superficially have been expected, a check to imports combined with a stimulus to exports. Imports rose faster than exports, from a monthly average of 2,117 million francs in 1936 to one of 3,347 million francs in the first nine months of 1937, the corresponding figures for exports being 1,288 millions and 1,871 millions respectively. This increase of 647 million francs in the monthly trade debit was offset by a great curtailment of exports of capital. Other former gold-bloc countries fared similarly. Thus the monthly average debit on the Netherlands' foreign trade rose from 22.5 million guilders in 1936 to 33.4 millions in the first nine months of 1937, and in Switzerland the corresponding rise was from 32.05 million francs to 48 millions. Belgium, which had devalued her currency a year before the others, also underwent a slight increase in her debit balance of trade early in 1937. The tendency of imports to rise faster than exports in industrial countries was a natural outcome of higher prices for raw products, and of increased internal activity.

**Scandinavia.**—The Scandinavian countries may be taken as another typical group, their chief exports being timber, dairy products, and other high-class foodstuffs, with some industrial manufactures. Their currencies were all linked to the pound sterling. Denmark, Norway, and Sweden had the same general experience, namely, a sharp rise of imports towards the end of 1936 and the beginning of 1937, followed after an interval by an almost equal (in Sweden, a greater) rise of exports. The net result was a slight increase of their monthly debit balances of trade in the first nine months of 1937 compared with the 1936 average, thus: Denmark, 12.7 million kroner, compared with 8.7 millions; Norway, 41.6 million kroner, compared with 19.8 millions; Sweden, 14.7 million kronor, compared with 11.5 millions. These increased debits were probably fully covered by larger invisible income, notably shipping earnings.

**Germany, Italy, Russia, etc.**—In 1936, Germany had maintained a credit balance of trade averaging Rm.45 millions a month. Higher commodity prices caused some inroad on this, but Germany's export business shared fully in world trade revival, and in the first nine months of 1937 her average credit was Rm.34 millions. The four-year plan of self-sufficiency had yet had little total effect on her balance of trade. Italy, on the other hand, failed to maintain her trading position, despite the devaluation of the lira. Her monthly average of exports rose from 455 million lire in 1936 to 855 millions in the first nine months of 1937, but imports more than doubled in value—from 501 million lire to 1,152 million lire a month. As a result, Italy's book balance on her exchange clearings changed from a credit of 529 million lire in Dec. 1936 to a debit of 253 million lire 11 months later. On the whole, the smaller countries of central and eastern Europe had a more favourable trading experience in 1937 than in 1936, a bigger surplus becoming available for debt service. Russia's position also improved, her imports being practically stabilized and her exports responding to favourable market conditions for wheat, oil, gold, etc.

**Australia, Argentina, etc.**—The typical experience of countries exporting mainly foodstuffs and raw materials was a high level of exports in late 1936 and the first half of 1937, followed by a recession, while imports remained at an expanded figure, thanks to greater internal purchasing power. Thus, Australia's exports, which had totalled £A23,700,000 in April, May, and June 1936, rose to £A35,300,000 in the same months of 1937. By Sept. 1937, however, the increase was less than £1 million a month, while imports were £2,400,000 (sterling) higher than in Sept. 1936. New Zealand's position was similar. Argentina's exports were actually lower in Sept. 1937 than a year previously, and imports had almost overtaken exports; her credit balance in the earlier period, however, had been abnormally high. Although Brazil's export expansion was longer maintained, she, too, underwent a substantial and continuing rise in imports.

**China and Japan.**—Up to the outbreak of war, China shared in the general expansion of world trade, the monthly average of imports rising from \$78.5 millions (standard dollars) in 1936 to \$104.3 millions in the first seven months of 1937, while the export average rose from \$58.8 millions to \$81.7 millions. In the subsequent three months, imports averaged \$42 millions and exports \$53.7 millions. High prices and defensive preparations caused a great expansion of Japan's imports early in 1937, but, on the other hand, her exports were well maintained despite the war. Monthly averages were as follows: Imports—1936, 225.2 million yen; Jan.–July 1937, 352.7 million yen; Aug.–Oct. 1937, 274.8 million yen. Exports—1936, 219.3 million yen; Jan.–July 1937, 253.3 million yen; Aug.–Oct. 1937, 285.2 million yen. For both countries it will be seen that the immediate effect of the war was to reduce purchasing power more than exporting power.

There were, broadly speaking, two phases of the movement of world balances of trade and other international payments in 1937, corresponding to the movement of raw commodity prices. In the first period, the primary producing and debtor countries accumulated increased credits, part of which had to be used for higher dividend and interest payments. The second period marked a new equilibrium, with the trade advantage turning on the whole in favour of the manufacturing creditor countries, since the spending capacity of the other group remained at its expanded level, while imports of food and raw materials were costing less.

(H. V. H.)

**Baldwin, Stanley Baldwin,** 1ST EARL, of Bewdly, Viscount Corvedale (1867–), British statesman (see *Encyclopædia Britannica*, vol. 2,



p. 967), was, following Mr. Ramsay MacDonald, prime minister from June 7, 1935, until his retirement on May 28, 1937, when (June 1) he was created a Knight of the Garter (Mrs. Baldwin being created G.B.E.) and (June 8) raised to the earldom. Lord Baldwin had been premier in four administrations, and for a longer period than any premier of recent times, Mr. Asquith excepted. His latter months of office were rendered exceptionally arduous by reason of the abdication (*see* WINDSOR, EDWARD, H.R.H. THE DUKE OF), and his duties in connection with the coronation, and, after taking his seat in the House of Lords (June 9), he enjoyed a well-earned rest. On Nov. 5 he was given a civic reception at the Guildhall, London.

**Balearic Isles.** A group of four large and eleven smaller islands lying in the western Mediterranean off the east coast of Spain, to which they belong, and of which they form a province. The larger are Majorca (1,312 sq.mi.), Minorca (278 sq.mi.), Iviza (230 sq.mi.), and Formentera (35 sq.mi.); the total area is 1,935 sq.mi., and the estimated population at the end of 1934, 376,735. Palma, the capital, on Majorca, is 133mi. by sea E. of Valencia, and 144mi. S. of Barcelona. The only other town of importance is Port Mahon, Minorca, one of the finest harbours in the Mediterranean, and, unlike Palma, heavily fortified.

On the outbreak of General Franco's rebellion in July 1936, all the islands, Minorca excepted, declared for the insurgents; within a few weeks Iviza and Formentera were taken by the Catalans, their attack on Majorca being a costly failure; but before the end of November, these islands were occupied by Italians as air and naval bases in the insurgents' cause. Questions were asked in the British House of Commons relative to this, and in the "Gentlemen's Agreement" of Jan. 1937, Italy assured Great Britain that she had no intention of disturbing the *status quo* in the western Mediterranean. Months later, on Oct. 18, the insurgents' headquarters, in consequence of reports of Italian activities in the Balearics and of a rumour of a suggested Anglo-French occupation of Minorca, announced that no cession of the islands, nor any measure of foreign control therein, would be permitted.

Meanwhile, many "incidents" had occurred: on March 30 the Government fleet shelled Majorca and Iviza; on May 24 and 26 Government planes bombed vessels in the harbour of Palma, killing six Italian naval officers and wounding others; and on May 30, the German battleship "Deutschland" was bombed off Iviza, with 26 killed and 71 wounded, an action which resulted in the bombardment of Almeria by German warships the following day. Early in August there was a recrudescence of air attack on vessels both north and south of the Balearics, and on Oct. 25, following an attack by an unknown plane on the Air France base in Minorca, France arranged for the convoy of all merchant ships from France to North Africa and for a warship to be stationed permanently off Minorca.

By early November, the Italian forces would seem to have evacuated Majorca, and Palma now became the chief Nationalist base for the blockade of the Spanish east coast and Minorca. (*See* also SPAIN, CIVIL WAR IN.)

**Balkan Entente,** a regional political understanding which came into being on Feb. 9, 1934, between Greece, Rumania, Turkey, and Yugoslavia, by the signature of a "Pact of Balkan Understanding" providing for a mutual guarantee by the contracting parties of all their Balkan frontiers, with consultation and a promise to abstain from independent action towards any Balkan Power not signatory to the pact. A secret protocol provided for joint action if any signatory were victim of aggression by a non-Balkan Power, and a Balkan Power joined in

the aggression; a further, still more secret protocol, precised measures to be taken against Bulgaria if the eventuality arose.

A permanent council, permanent secretariat, and permanent economic council were established. The councils have met regularly; in moments of crisis, such as the murder of King Alexander of Yugoslavia, the desired unity of front has been maintained. The economic council has developed much activity in discussing the economic and financial relations between the signatories, improving communications, developing tourist traffic, etc.

It was no secret that when the pact was negotiated Yugoslavia was most anxious to include Bulgaria who found herself, however, unable to guarantee frontiers which she believed to be unjust. Yugoslavia subsequently negotiated a separate treaty with Bulgaria (*see* BULGARIA). The chief misgivings felt in Greece were due to the fear that she might be involved by the pact in war with Italy; the Italo-Yugoslav agreement (*see* YUGOSLAVIA) largely removed these fears. For texts see *Documents on International Affairs*, 1933, pp. 408-9, and 1934, pp. 298 ff. *See* also *Survey of International Affairs*, 1934, pp. 508 ff. (C. A. M.)

**Ballet,** understood as co-ordinated dancing and miming by a troupe of dancers, not the intimate art of an individual (*see* DANCING), enjoyed an increasing vogue in Europe and America in 1937. While the traditional classical style held its own, much contemporary work was seen. Examples indigenous to America were Catherine Littlefield's creations, as director of the Philadelphia ballet, of *Barn Dance* (fantasy on popular airs and figures of the pre-jazz era), *Terminal* (railway-station burlesque, to "hot" music), and a new, cumulative version of *Bolero* (Ravel). This very well drilled but spirited company visited Paris and London, while Col. De Basil's *Ballets Russes* were seen in America. Agnes de Mille, the American character-dancer, besides giving solo seasons in London, participated in English productions.

In Europe, countries with State-aided ballet, such as Austria, Lithuania, and Denmark, maintained their traditions; Poland entered the field. The Moscow State schools trained excellent dancers, but artistic enterprise was ruled by propaganda. Italy produced nothing new of distinction for an exquisite Roman *ballerina*. In France, at the Paris Opéra, Serge Lifar's *Icare* and *David Triomphant* won success; he also made some interesting experiments in the substitution for music of mere rhythmic and percussive sounds. The cream of the year's art, international and native, was seen in London.

Here the former was represented by the *Ballets Russes* (Marsine, *maitre*), who gave their fourth summer season at the Royal Opera House, Covent Garden, as before, collaborating in certain operas towards the close of the "grand" season, and returning thither in the autumn in brilliant revivals such as *Petrushka* and *Scheherazade* (supervised by their creator, Fokine) and *Le Coq d'Or* (reworked as ballet only); and by René Blum's *Ballets de Monte Carlo* (Fokine, *maitre*) at the Coliseum. The allied activities of the English school of ballet centred around Sadler's Wells theatre, the Ballet Club at the little Mercury theatre, and the *Ballet Rambert* (season at the Duchess theatre), giving scope to Ninette de Valois, Marie Rambert, Frederick Ashton, and others, as choreographers.

A significant recent development has been the "setting to motion" of recognized masterpieces of music, symphonic and other, led by Massine with his *Choreartium* (Brahms's Fourth Symphony) and *Symphonie Fantastique* (Berlioz), presented in a perfected version; Mozart's G minor Symphony is engaging his attention. The tendency remains general, as witness Fokine's *Les Elements* (Bach's B minor Suite) and *Les Elfes* (Mendelssohn's *Midsummer Night's Dream* Overture and Violin Concerto), and



Lichine's *Francesca da Rimini* (Tchaikovsky's Tone-poem); even Mahler's *Kindertotenlieder* and Schubert's *Death and the Maiden* Quartet were pressed into service.

Nevertheless, the outstanding achievement of the year was *Checkmate*, an original conception by Ninette de Valois and Arthur Bliss, the English composer, who worked out a chess-board duel between Love and Death. This was first produced by the Sadler's Wells company on their visit to Paris in June, who thus secured an international reputation after an existence of only five years; it scored a great success later in London. Other noteworthy productions by Sadler's Wells were *Wedding Bouquet* (a satire on Edwardian manners by Lord Berners and Ashton, with words for chorus by Gertrude Stein), and *Les Patineurs* (a Meyerbeer-Ashton essay based on skaters' movements in the manner of *Les Sylphides*).

The Markova-Dolin company flourished under a new *maitresse*, Bronislava Nijinska, Susan Salaman's circus-frolic, *Show Folk*, and Keith Lester's *David* here typifying modern work. A curious innovation, which awaits the development of a specialized technique, was ballet skated on ice at Covent Garden. (H. Fw.)

On Jan. 24, at the age of 67, Nicolas Legat died in London, where he had been teaching for some years. He was a famous dancer and teacher of the old Imperial Russian ballet, and among his pupils in Russia he numbered Kchessinska, Preobrajenska, Trefilova, Pavlova, Karsavina, and Nijinsky.

In November Prince Serge Wolkonsky died in Richmond, U.S.A., at the age of 79. He was director of the Imperial theatres in Russia in 1901-02, and was an ardent reformer of the ballet.

On Nov. 25, Miss Lilian Baylis, who had done so much for ballet at Sadler's Wells died at the age of 63 in London. (See also DANCING; MUSIC.)

**Baltimore**, the metropolis of Maryland, is situated at the head of navigation on the Patapsco river, an estuary of Chesapeake bay. It has an area of 91.93 sq.mi. and a population of 855,127 (U.S. estimate, 1937) of which 688,290 are white and 166,837 coloured. Birth rate, 1937, 14.5; mortality rate, 1937, 13.4. The shore line of the harbour inside the city limits is 37.7mi. and there are many square miles of deep water anchorage immediately below the city.

**History.**—Mayor, Howard W. Jackson; comptroller, R. Walter Graham; president of the city council, George Sellmayer. All terms expire in 1939. Bonded indebtedness (Nov. 1937) \$182,434,579. Assessed valuation of taxable property (1938) \$1,959,566,194. Appropriations for municipal purposes for 1938, \$47,414,286. A program (\$32,000,000) of public works, including water works, bridges, street widenings and extensions to facilitate motor traffic is in progress.

During 1937 the Pan-American Airways chose the Baltimore municipal airport as the base for its regular Bermuda service in conjunction with Imperial Airways and regular flights began Nov. 14. The year saw, also, the first appointment of a Negro to the police force, the adoption of voting machines for all elections, the continuing substitution of buses for trolley cars and the razing of hundreds of buildings in the older parts of the city to make space for the parking of automobiles.

**Education.**—Among the educational institutions in Baltimore are Johns Hopkins university and medical school; Goucher college; the University of Maryland (professional schools); University of Baltimore; Morgan college (Negro); the Peabody Conservatory of Music; the Maryland Institute of Art; the Enoch Pratt library and the Peabody library. There are two notable public art collections, the Walters Gallery and the Baltimore Museum of Art, as well as several smaller ones. The city maintains a symphony orchestra supported by municipal appropriation,

with Werner Janssen as guest conductor for the 1937-38 season.

**Manufactures.**—1,928 establishments, employing an average of 86,088 persons produced products valued at \$627,325,704 in the Baltimore area in 1935. In Baltimore city proper the total value of manufactured products reached \$538,804,929 the same year.

Water-borne commerce, as always, is the backbone of the economy of Baltimore. Foreign trade, 1937: Exports \$107,677,251; imports, \$100,059,188. Coastwise trade (Atlantic and Gulf) increase of 33% over 1936. Intercoastal trade (Atlantic and Pacific) increase 50%.

(H. Ow.)

**Baluchistan.** A mountainous country lying on the Arabian sea, between Persia and India. The total area is 134,638 sq.mi., and the total population 868,617. The tract is divided into: (1) British Baluchistan (area 54,229 sq.mi.; pop. 463,508, of whom 87% are Moslems), a minor Indian province with its capital at Quetta, and (2) a number of semi-independent States under British influence, of which the chief are Kalat and Las Bela.

The country is inhabited by two distinct races, the Brahui and the Baluch, the language of the former providing anthropologists with a problem of peculiar interest. The province is under a chief commissioner, responsible to the Government of India, and has not yet been made autonomous, though a movement is on foot for enlarged political rights.

On May 1, 1935, the town and cantonment of Quetta were ravaged by an earthquake which killed 30,000 out of the 70,000 inhabitants. The seat of the administration was temporarily moved to Karachi, but active measures were pursued during 1937 to restore the devastated area.

(ME.)

**Bananas.** A year described as average was reported in 1937 in most of the banana-producing countries. There was some loss from blowdowns in Jamaica and from cool weather in Mexico. The so-called Segatoko leaf spot disease (*Cercospora Musae*) was reported as being satisfactorily cleared up by spraying and dusting with fungicides. The United Fruit Company, which has 99,934 acres of bananas in Central and South America, reported shipments of 57,846,216 bunches of bananas in 1937, compared to 52,988,000 in 1936. Shipments to the United States and Canada in 1937 were 36,875,922 bunches, compared to 34,025,426 stems in 1936. The company reported its European shipments as 20,970,294 stems in 1937 and 18,963,537 in 1936. Further data for 1937 are not available but figures for previous years show that the Caribbean countries export approximately 80,000,000 bunches of bananas or more annually, with the leading producers being Jamaica, Honduras, Mexico, Colombia, Panama, Cuba, Guatemala, Guadeloupe and Nicaragua.

**Bankers Association, American:** see AMERICAN BANKERS ASSOCIATION.

**Bank for International Settlements.** In comparison with previous years the business activities of the bank in 1937 have shown a marked increase. To some extent this is reflected in the balance sheet, which rose from 604.9 million gold Swiss francs at the end of Nov. 1936 to 653.3 million gold Swiss francs at the end of Nov. 1937; and this increase has occurred in spite of the fact that the holdings of such currencies as have been subject to depreciation represent a lower gold value. The volume of operations has increased as a result of the large movements of funds between different countries and the uncertainty that, especially at certain periods, prevailed on the foreign exchange and gold markets. Gold is being used increas-



ingly for monetary reserves and for the settlement of international balances; this means that central banks have to procure foreign exchange against gold and gold against foreign exchange in order to be able to intervene on their own exchange markets; the bank has had its share of the business resulting from such operations. It should also be mentioned that the bank has devoted increased attention to the possibilities of financing foreign trade, particularly in relation to countries with exchange control; it has been possible to arrange certain facilities to aid exports by means of credits obtained from central banks in addition to the resources of the bank itself. Though the amounts involved are still moderate, the transactions that have been set on foot can be regarded as an attempt to find suitable methods of providing credits for export trade when ordinary financing meets with great difficulties. The net profits for the fiscal year April 1936 to March 1937, after making allowance for contingencies, amounted to a little more than nine million gold Swiss francs, approximately the same as those for the preceding year.

The bank has continued to serve as a centre of contact between central banks and, in a period of great uncertainty as to the future of the monetary mechanism, this contact has been greatly appreciated, as is shown by the fact that none of the central bank governors who are members of the board has been absent from a meeting during the year. At the general meeting in May 1937, Dr. L. J. A. Trip, governor of the Nederlandsche Bank, resigned his position as president of the Bank for International Settlements and Dr. J. W. Beyen was appointed in his stead. By a modification of the statutes, a separate chairman, in the person of Sir Otto E. Niemeyer, was appointed to preside over the meetings of the board. (P. J.N.)

## Banking.

Structural trends evident in 1935 and 1936 continued during 1937 to decrease the number of commercial banks in operation in the United States. As a result of failures, voluntary liquidations, and consolidations the number of such banks fell from 15,116 on Dec. 31, 1936 to 14,878 on Nov. 30, 1937, the latest date for which figures are available. The number of mutual savings banks in operation on Dec. 31, 1937 was 562, one less institution than was operating at the end of the previous year.

Most significant of the bank asset trends during 1937 was the increase in commercial loans, accompanied by a decrease in security holdings. This trend, which reversed depression tendencies, was strong during the first ten months of the year but was arrested by the business recession during the fall. Bank holdings of direct and fully guaranteed obligations of the U.S. Government are estimated to have declined by about 10% during the year, while holdings of other securities fell more than 5%. Commercial, industrial, and agricultural loans are estimated to have increased by about 14%.

Loans to brokers and others on securities fell off sharply in the last three months of the year. The liquidation of security holdings occurred almost entirely in larger correspondent banks, in part to meet the increased commercial and industrial demand for credit, but principally as a consequence of the demand of country banks for funds to meet increased reserve requirements. Security holdings of country banks actually increased during the year.

Demand deposits, including deposits of the U.S. Government, declined by an estimated \$1,500,000,000 during the year. An increase of about \$600,000,000 in time and savings deposits is estimated to have occurred during the period. The activity of deposits, as reflected in debits to individual deposit accounts continued at a level far below that of the 1920's. For activities of the Board of Governors of the Federal Reserve System and the

Treasury in the field of money and credit control during 1937, see FEDERAL RESERVE SYSTEM.

The banks' net earnings for 1937 were probably higher than for 1936. Net profits, however, were probably lower in 1937 than in the preceding year. Interest rates continued at the low levels which have characterized the money market during the past three years. Member banks held more than \$1,000,000,000 of excess reserves at the end of 1937.

Banks continued to benefit from the savings in money costs made possible by elimination of interest payments on demand deposits and reduction of the rates allowed to be paid on time and savings deposits. Income from service charges, commissions, and fees continued to increase. Profits on securities and recoveries on charged-off assets, however, were substantially below the amounts realized in 1936.

From the beginning of deposit insurance to Nov. 30, 1937, 174 insolvent insured banks were placed in receivership or merged with the aid of loans by the Federal Deposit Insurance Corporation. The 270,000 depositors in these banks, having total deposits of \$73,395,000, were protected to the extent of \$69,760,000, or 95% of their claims, by insurance, offset, pledge of security, preferment, or through loans and purchase of assets by the Corporation. All but 621, or less than one-half of 1%, of the depositors in the suspended banks, were fully protected against loss. Of the 174 banks 123, with deposits of \$35,421,000 were placed in receivership and 51, with deposits of \$37,974,000, were merged with other banks with the aid of loans and purchases of assets by the Corporation amounting to \$16,376,000.

The National Association of Supervisors of State Banks was active during 1937. This association provides a clearinghouse for the several State and territorial supervisors of banking and co-ordinates their efforts to work in the interest of the State banking systems. The association's executive committee met in Washington on several occasions to discuss with legislators, the Board of Governors of the Federal Reserve System, and the Federal Deposit Insurance Corporation matters affecting State banks. The committee currently is working toward the enactment of uniform minimum operating standards for all State banks, a step which ultimately will improve the working basis of all classes of banks.

The ability of bank managers as well as their knowledge of banking processes should benefit from 1937's awakened consciousness of the possibilities of research and education. Announcement was made during the year of a banker-sponsored research project into all aspects of the financial structure on a scope not approached since the investigations of the National Monetary Commission 30 years ago.

Research into general and specialized aspects of banking was placed on the agenda of nearly every State association of banks and was given greater prominence than ever before by national professional groups. Supplementing the periodic meetings of State associations there were established in many instances during the past year schools of varying lengths sponsored jointly by the associations, the State departments of banking, and the State universities.

No major Federal legislation affecting banks or banking was enacted during 1937. Early in the year William G. McAdoo, U.S. Senator from California, introduced two bills. One of these would authorize the establishment of branches by a national bank anywhere within the boundaries of the Federal Reserve district which includes the bank's home office. The second bill aimed at limitation of bank stock ownership by holding companies. Wright Patman, representative from Texas, introduced a bill which provided principally for transfer of ownership of the Federal Reserve banks from member institutions to the U.S.



London Clearing Banks  
(£ millions)

Bank	Deposits		Cash		Call and Short Loans		Discounts		Investments		Advances	
	1936	1937	1936	1937	1936	1937	1936	1937	1936	1937	1936	1937
Barclays . . . . .	421	424	43	44	23	23	68	54	110	105	177	198
Lloyds . . . . .	397	403	40	41	34	31	52	50	112	112	155	168
Midland . . . . .	493	502	52	52	28	24	92	90	124	114	193	217
National Provincial . . . . .	308	309	31	31	28	19	41	34	88	85	121	138
Westminster . . . . .	360	363	37	37	27	22	61	56	110	111	126	139
District . . . . .	78	80	8	8	9	9	7	4	29	30	27	31
Martin's . . . . .	91	93	9	9	6	7	3	3	36	30	38	44
Williams Deacon's . . . . .	37	37	4	4	7	6	2	1	13	12	12	14
Coutts . . . . .	24	25	2	2	3	3	1	2	9	9	11	10
Glyn, Mills . . . . .	40	38	4	4	10	10	1	1	10	12	15	12
National . . . . .	39	38	3	3	6	6	2	1	15	14	15	16
Total . . . . .	2,287	2,311	233	235	180	160	329	297	656	634	890	986

Government. None of these bills was called to a vote in either house of Congress in 1937. (See also FEDERAL LAND BANKS.)

(L. T. C.)

**Great Britain.**—The Bank of England is the central bank of the country, and as such acts as the banker of the Government and the commercial banks. Commercial banking in England and Wales is mainly in the hands of the 11 clearing houses (members of the London Clearing House).

Their names and average position for Nov. 1936 and 1937 are as above, all figures being in millions of pounds.

The first five of the clearing banks, known as the "big five," operate branches all over the country. The next three operate mainly in Lancashire, the next two in London, and the National Bank largely in Ireland. The general tendency during 1937 was for the banks to experience a greater demand for advances, due to the expansion of trade, particularly in the heavy industries.

Since 1932 the policy of the Government, carried out by the Bank of England (*q.v.*), has been to make credit cheap and plentiful. The gold reserves of the Bank of England have greatly increased since that year, and so this expansion of credit could be carried out without any need for heavy purchases of securities by the bank. During the past year the Bank of England, in execution of the Government's policy, has made little change in the size of the credit base. The result is the very small increase in clearing bank cash, shown in the above table. (N. E. C.)

**Canada.**—Under the Canadian Constitution, banking and control over banks are vested solely in the National Government. There are, therefore, no true Provincial banks. The Bank of Canada which obtained its charter in 1934 is now (1938) a national bank as the result of recent amendments assigning a majority of its shares to the Minister of Finance. The bank is empowered to buy and sell securities of the Dominion, the Provinces, the United States and Great Britain, and, to a limited extent, the securities of other British Dominions and France. Short term securities of the Dominion and the Provinces may be re-discounted. It may also buy and sell certain classes of commercial paper and may re-discount them when endorsed by a chartered bank. Short term advances may be made to the Dominion and Provincial Governments and to chartered banks. It may buy and sell gold, silver, nickel and bronze coin, gold and silver bullion and foreign exchange.

The Dominion Government notes have been replaced by notes of the Bank of Canada. The notes of the chartered banks are being gradually replaced by Bank of Canada notes and by 1944 the chartered banks will be allowed to issue their own notes to an amount equal to only 25% of their paid-up capital. It seems probable that, in course of time, even this limited right to issue

notes will be withdrawn. The Bank of Canada must maintain a reserve of gold equal to not less than 25% of its total note and deposit liabilities in Canada. It now holds all the gold reserves in the nation. It acts as a bank for the Government and for the chartered banks; not for the public. The chartered or commercial banks now (1938) number only 10 as compared with 28 in 1867. They are allowed to have branches in any part of Canada and in any other country which permits it. At present (1938) the number of branches in Canada is 3,398; in other countries 145. The chartered banks must maintain with the Bank of Canada a reserve equal at least to 5% of their deposit liabilities. They must make monthly reports to the Government and they are subject to regulation by Government inspectors. (J. C. HE.)

**Australia.**—The Commonwealth Bank is the central bank of the Dominion, but it also does a certain amount of commercial banking. The commercial banks are known as the "trading banks." Both the Commonwealth Bank and the trading banks hold a large part of their cash reserve in sterling in London, and these are known as "London funds." Their size, and so the whole supply of credit in Australia, depends upon Australia's trade balance. During the year to June 1937, there was an increase of about £20 million sterling in London funds, which made credit easier. There is no organized money market in Australia, and the banks lend the bulk of their funds to their customers. The main event in 1937 was the issue of the Australian Banking Commission's report, which made numerous recommendations on the relations between the Government, the Commonwealth Bank, and the trading banks.

Two main points of controversy arose: the proper relation between the Government at Canberra, the Commonwealth Bank, and the trading banks, and the function and ownership of London funds. Both points to some extent merge in the basic question of whether the Commonwealth Bank is to be partly a commercial bank, or entirely a central bank.

**India.**—The structure of Indian banking is still very complex, but during the past few years it has been simplified and co-ordinated in certain important respects. The principal change was the foundation of the Reserve Bank of India in 1935. This bank performs for India all the normal functions of a central bank, and is also bound to buy and sell sterling on demand at a pegged rate of 1s. 6d. per rupee. Thus it also acts as the supplier of foreign exchange.

India's foreign trade is largely financed by the 17 exchange banks. The internal banking structure is very complex. There are 105 joint-stock banks with paid-up capital and reserves of at least one lakh (£7,500) and those with paid-up capital and reserves of at least 5 lakhs (£37,500) must keep balances with the



Reserve Bank. There is a whole system of co-operative banks. Finally, as intermediaries between the banking system and the peasant in need of credit, there are numerous native bankers, such as the local mahajan or bania, and the shroff who discounts for the mahajan. The chain then leads on via the co-operative, indigenous, or joint-stock bank to the Reserve Bank.

**South Africa.**—The banking system consists of the Reserve Bank and a limited number of branch-banking systems. One such system (Barclays D.C.O.) also operates in other parts of the Empire. Up to the end of 1932, when South Africa abandoned the gold standard and linked on to sterling, credit conditions were very difficult. Since then, however, South Africa has passed through a period of great prosperity. This was due, first to the rise in the price of gold, due to the depreciation of the South African pound, and second, to general recovery at home and abroad. Comparing 1932 and 1937, deposits have risen from £51.3 to £59.7 millions, and discounts and advances from £21.9 to £28.3 millions.

**Europe.**—Banking in many important European countries differs from British banking in several respects. First, there is not always a clear-cut division between central banking and commercial banking. In France, for example, the Banque de France (*q.v.*) is both a central bank and a commercial bank. Next, with the exception of Holland, there is no well developed money market as exists in London. Another important point of distinction is that in many countries there are various classes of banks. Thus France has her *banques d'affaires* as well as her ordinary commercial banks of deposit, and the *banques d'affaires* make long-term investments or participations in industry. Germany has systems of commercial banks, savings banks, *girozentralen* (which now act as bankers to the savings banks), and mortgage banks. Many other countries have mortgage banks, whose primary function is to finance land purchases, and in many countries banks of all kinds are readier to engage these resources in industry than is the custom of British banks. Most countries have branch-banking systems, but again there are exceptions, as in the case of the Cantonal banks in Switzerland.

Thus, the whole banking system of the Continent is much less definite in character than in England, and in the absence of a money market, is not so susceptible to control. Generally during 1937 the tendency was in the direction of greater liquidity. Thus, Holland and Switzerland, and to a lesser degree France, benefited from the devaluations of Sept. 1936. Credit conditions in Germany have now become extremely liquid, owing to the recovery of 1932 onwards, and the methods of financing it by means of short-term borrowing. Scandinavia has been prosperous, and this again has meant liquidity. On the other hand, banking on the Continent is not only in the hands of a few large, well-defined institutions. There are a host of small houses, who can barely claim to be called banks, and many of these engage in exchange speculation.

(N. E. C.)

**Bank of England.** The recent structure of the Bank of England dates from 1928 when the Bank of England and the currency note issues were amalgamated under the control of the bank. Subsequent history includes the suspension of the gold standard in 1931 and the establishment of the Exchange Equalization Account in 1932. Some of its 1937 functions are:

(a) It is the custodian of the nation's gold reserve. Since 1932, part of this gold is held by the Exchange Equalization Account, but the account is operated by the bank under the general direction of the Government.

(b) It has the sole right of note issue in England and Wales. Its notes are legal tender and not convertible into gold.

(c) It is the Government's banker and adviser upon monetary matters. It is also responsible for the administration of the national debt.

(d) It is the "bankers' bank"; that is, it holds part of the cash reserves of the joint-stock and other commercial banks.

(e) It is the controller of the supply and cost of credit. By fixing bank-rate it roughly determines the general level of short-term interest rates. By buying or selling securities it can expand or contract commercial bank cash and the general supply of credit. It is the lender of last resort—that is, it will always lend to approved borrowers, at its own price, when other sources of credit fail.

(f) It is an unofficial but effective link between the Government and the city. It is also in contact with foreign central banks and the Bank for International Settlements.

During 1937, the way in which it exercised most of these functions can be summarized by saying that it maintained an ample supply of credit and stable monetary conditions in both internal and external relations. At the end of 1936, it bought £65,000,000 of gold from the Exchange Equalization Account, simultaneously reducing the fiduciary note issue by £60,000,000. This relieved the account of surplus gold without expanding overmuch the internal credit base. During the gold scare of the early summer, the bank bought gold both for the Exchange Equalization Account and also for itself. The Christmas expansion in the note circulation was prevented in two ways from restricting the supply of credit. First, the fiduciary note issue was temporarily enlarged by £20,000,000, so as to provide the bank itself with the extra Christmas currency. Next, as notes were drawn by the public out of the joint-stock banks, the bank acquired additional Government securities which always had the effect of replenishing the joint-stock banks' cash.

The effect of some of these operations is illustrated in the following table:

Bank of England  
(£ millions)

	Dec. 16	Jan. 13	Apr. 7	June 23	Nov. 10	Nov. 24	Dec. 22
	1936	1937	1937	1937	1937	1937	1937
Gold . . . . .	313.6	313.7	313.7	326.4	326.4	326.4	326.4
Fiduciary Note Issue	200.0	200.0	200.0	200.0	200.0	220.0	220.0
Note Circulation . .	467.7	455.0	469.9	483.7	485.6	480.4	509.3
Reserve . . . . .	46.6	59.0	44.6	43.6	42.4	67.5	38.0
Government Securities*	89.1	83.2	101.1	98.0	103.9	76.2	96.5
Bankers' Deposits . .	96.2	106.7	94.8	95.0	90.9	83.6	98.2

\*In banking department.

A comparison of the returns for April 7 and June 23 shows the bank's gold purchases during the summer gold scare. The returns for Nov. 10 and 24 show the reinforcement of the reserve from the increase in the fiduciary note issue—effected by the transfer of £20,000,000 of Government securities from the banking department to the issue department. The return for Dec. 22 shows the Christmas expansion in the note circulation, and how the consequent decline in the reserve was offset by fresh acquisitions of Government securities. The result was that bankers' deposits were able to gain the full benefit of the Dec. 1 war loan dividend payment, and so rose, and did not shrink during those four weeks from Nov. 24 to Dec. 22.

(N. E. C.)

**Bank of France.** The Banque de France is the central bank of France, but it also does a fair amount of commercial banking business through its branches all over the country. It was founded by Napoleon in 1800, and up to July 1936 was governed by a governor and two vice-governors, nominated by the finance ministry, and 15 regents appointed by



the shareholders. Only the 200 largest shareholders had the right to attend the annual meeting.

In July 1936 an act was passed altering the constitution of the Banque de France. The regents were replaced by a board of 20 directors (together with governor and vice-governor). Ten directors are civil servants; five represent industry, trade, agriculture, labour, and the consumers' co-operatives; the rest represent banking (two representatives), the staff of the Banque de France, "small traders," and the national economic council. Including the governors, 13 out of the 23 directors are civil servants, and so the Government now has control over the Bank.

The position of the bank's loans to the Government was also regularized at that time, and the Government took additional borrowing powers. In place of frs. 14,000 millions of rediscounted treasury bills held by the bank in June 1936, the bank had outstanding in Nov. 1937 frs. 27,000 millions of provisional advances to the Government.

The gold held by the bank was revalued in Oct. 1936, and again in July 1937, in accordance with the two devaluations of the franc. The profit on the earlier revaluation was used mainly to constitute the French Exchange Fund, an equivalent quantity of gold being withdrawn from the bank for that purpose. The profit on the later revaluation was used to establish a special fund for the support of the *Rentes* market, but no gold was then taken from the bank. Between June 1936 and Nov. 1937, the bank's gold stock increased in value from frs. 53,953 millions to frs. 58,932 millions. The note circulation rose from frs. 84,804 millions to frs. 90,948 millions and private deposits from frs. 6,180 millions to frs. 17,860 millions. These latter increases were mainly due to the new Government borrowing.

(N. E. C.)

Bankruptcy.

In the United States the present decade has been no exception to the rule that bankruptcy laws are the products of periods of financial depression. The multitude of recent statutes in this field are, however, noteworthy in their divergence from traditional objectives of bankruptcy. In none of these are the forms of relief limited to the equitable distribution of the debtor's assets among his creditors and his consequent discharge from his obligations. Since 1933 "debtor relief" has taken on wholly new aspects, both as to the kind of debtors who may avail themselves of the benefits of bankruptcy, and as to the nature of the relief. A period of intensive legislative activity was climaxed in 1937 by the introduction of a bill for the comprehensive revision of the entire Bankruptcy Act (the so-called Chandler Bill, H.R. 8046, 75th Congress, 1st session).

The variety of persons for whose benefit bankruptcy legislation has been enacted since 1933 ranges from farmers to railroads. The latter, hitherto outside the Bankruptcy Act, may now be re-organized under Section 77, enacted in 1933 (47 Stat. 1474) and revised in 1935 (49 Stat. 911). Similar privileges were extended to ordinary business, industrial and utility corporations by Section 77B, enacted in 1934 (48 Stat. 912). The urban mortgagor, without undergoing ordinary bankruptcy, may seek relief in the form of compositions or extensions under Section 74, enacted in 1933 (47 Stat. 1467). In the same year the farmer was also given these privileges by Section 75 (47 Stat. 1470); and under the amendments to that section in 1934 (48 Stat. 1289) and 1935 (49 Stat. 943), may in addition avail himself of a limited moratorium on the payment of mortgage obligations. Section 80 of the act, enacted in 1934 (48 Stat. 798), and re-enacted in 1937 (50 Stat. 654-655), permits such local taxing agencies as municipal corporations, and drainage, irrigation and levee districts, to effect a settlement of their defaulted obligations with the aid of the Bankruptcy Act.

\* The earlier of these two statutes was held unconstitutional by

a divided Supreme Court in *Ashton v. Cameron County Water Improvement District*, 298 U.S. 513 (1936). It is only with respect to these taxing agencies, however, that doubts still linger over whether all of these debtors are properly at home within the confines of the Bankruptcy Act.

The element common to all of these statutes is their resort, at least in part, to the device of composition. Composition may be a settlement of debts by a part payment, or involve an extension of time for payment, or it may be both. Its characteristic feature lies in the binding sanction which the Bankruptcy Act gives to such agreements; if a majority or more of the creditors agree to an offer of composition submitted by the debtor, dissenting minorities are compelled to accept the same treatment. Compositions have been possible under Section 12 of the Bankruptcy Act since 1898 (30 Stat. 549), but have been limited to the treatment of unsecured debts. Until the advent of these statutes bankruptcy laws left unimpaired the lien of secured creditors. Under Section 74 such liens may be impaired by extension of the time for payment. And their more serious impairment as to amount is possible and valid under the other of these statutes, when accomplished by a composition. An even more radical innovation in the treatment of secured debts is contained in Section 75 (s) as re-enacted in 1935 (49 Stat. 943).

These provisions do not turn on the consent of creditors. In essence they grant to the insolvent farmer a three-year moratorium on his defaulted mortgage, on payment of a reasonable rental. These measures were held constitutional in the outstanding bankruptcy decision of 1937, *Wright v. Vinton Branch of Mountain Trust Bank*, 300 U.S. 440.

These expanding conceptions of the bankruptcy power will perhaps leave their major impress in the field of corporate reorganizations. In this connection the Chandler Bill, previously mentioned, undertakes the extensive revision of Section 77B, with particular emphasis upon remedying its deficiencies in respect to the protection of investors. In the field of ordinary bankruptcies, the bill would clarify definitions, jurisdiction and practice, and eliminate present delays and expense in administration. The fundamentals of the present act are not disturbed. (See also RAILROADS.)

(W. O. D.)

**Great Britain.**—In Great Britain there were no statutory changes in the Bankruptcy Acts 1914 and 1926 or the Deeds of Arrangement Act during 1937.

The failures in 1937 showed a small improvement over 1936, but it does not seem possible that we shall ever see the failures reduced to negligible figures. There appears to be a definite point around which the failures fluctuate. There has been a small yearly improvement since 1927 with the exception of a rather sharp set back in 1931 and 1932 when the total failures rose to over 8,000.

The total failures in the United Kingdom and Ireland during 1937 totalled just short of 5,600, an improvement of 1.02% over 1936. Of this total 2,084 were under Deeds of Arrangement. The chief offenders in their order were as follows:

Building . . . . .	588
Groceries and Provisions . . . . .	482
Farmers . . . . .	315
Drapers and Hosiery . . . . .	254
Plumbing, Painting and Gasfitting . . . . .	237
Private Persons . . . . .	208

The wholesale trades accounted for 7.85% and were predominantly resident in the London district. This was an increase over 1936 of 5.04%. The heaviest county outside of the London area was Lancashire for failures in the wholesale section, one of the effects of foreign political troubles.



There were several businesses in which there were no failures, the principal ones being bankers, brewers, music publishers and shipwrights.

To summarize and publish figures in terms of money values would be to give misleading figures as to loss of investment and circulation of business credit because we should really take into consideration the realization at sales and dividend to creditors declared very often years after the failure.

One redeeming feature of 1937 was the absence of any nation-shaking disaster.

**Baptist Church.** The Baptists of America, totalling 10,119,379 members, are divided into two main bodies; the first, three groups with 9,608,689 members; the second, fifteen miscellaneous groups with 510,690 members. In the first division the Southern Convention has 24,671 churches and 4,482,315 members; the National (coloured) 22,000 churches and 3,650,044 members; the Northern 7,616 churches and 1,476,330 members. According to latest statistics, the Southern received 92,898 new members during the year; the National 85,000; the Northern 17,519.

The Southern and Northern reported gains in church contributions and missionary benevolences—to the amount of \$2,300,120 and \$795,577 respectively.

Each Convention took action respecting certain social problems. Through its Social Service Commission the Southern reaffirmed "our unchanging condemnation of mob violence in all forms," declaring, "we shall not be satisfied or content until lynching shall cease and mob violence shall be completely banished." Resolutions denounced war and commended the League of Nations as "a very great force and influence for steadying the international situation and averting war." "Child marriages" were deplored and "the laxity and inadequacy of existing statutes in the several States for the regulation of marriage."

The Northern Convention pledged itself "to work for a constitutional amendment providing that Congress shall not have power to declare war involving the sending of our Army to foreign soil . . . until . . . authorized by vote of the American people taken in a national referendum." In industrial affairs, it resolved, "that we continually sensitize our consciences to the wrongs and injustices inherent in our social and economic life . . . affirming our conviction that Christ's principle of the Golden Rule and his concern for the building of the Kingdom of God . . . lay upon us . . . the compulsion to work for a living minimum wage . . . to be set by law." Each Convention appointed a Committee on Public Relations which were to co-operate "when principles held alike by Northern and Southern Baptists are in any way endangered." Perhaps the most significant action of these three Conventions was their decisions to participate in the World Conferences at Oxford and Edinburgh, July 12-16 and Aug. 3-18, 1937, respectively. At the Lausanne Conference in 1927 these Conventions declined to be represented. At each of the 1937 Conferences the Southern Convention had two duly appointed delegates. The Northern had eight official delegates and seven associates at Oxford, five delegates with three alternatives at Edinburgh. The National had one delegate at Oxford and one visitor at Edinburgh. (R. E. E. H.)

**Great Britain.**—The Baptist Union of Great Britain and Ireland has, through its affiliated churches, a membership of 293,198, a decrease of about 3,000 on the year 1936. Full statistics of the Baptist Church in the British Isles for 1937 show that 3,224 churches, with seating accommodation for 1,439,687 people, have a membership of 392,535 and 401,906 Sunday school pupils. A year previously the membership was 396,531 and Sunday school pupils numbered 418,483. The Baptist World Alliance, a federation of national unions, has some 12,000,000 communicant mem-

bers in 70 countries the world over. The Strict and Particular Baptists have in England and Wales about 20,000 members.

The president of the Baptist Union 1937-38, is Mr. H. L. Taylor (of Bristol), and the Annual Assembly of 1937 took place at Manchester in April. It was reported that the Baptist Forward Movement, founded for the purpose of raising £1,000,000, was steadily making ground in an effort for church extension, it being claimed that since the World War 8,000,000 people have settled in the new housing areas in Great Britain. The international work of the young people's department is being developed, and correspondence is freely exchanged between home Sunday school members and those in other lands. Young People's Fellowships have shown a marked increase.

**Baqir Sidqi Pasha** (1890-1937), Iraqi soldier and statesman; born at Askeri, near Kirkuk, in Kurdistan. At the age of 18 he was a staff officer in the Turkish Army, and during the War he served in the Dardanelles campaign. In 1931 he became a colonel in the Iraqi Army, with command of the northern zone; and in the following year attended courses in England at the Staff college, Camberley. In 1933 King Feisal dismissed Baqir Sidqi from his post in consequence of his responsibility for the massacre of unarmed Assyrians; but he was shortly afterwards restored and made pasha. In Nov. 1936 he brought off a successful military *coup d'état*, was appointed permanent chief of the Iraqi General Staff, and became military dictator of his country. Together with his colleague, Major Muhammad Ali Jawad, he was assassinated on the Mosul aerodrome Aug. 12, 1937, by an Iraqi soldier, reported to be a relative of Jafar Pasha, defence minister in the cabinet overthrown by the 1936 coup.

**Bar Association, American:** see AMERICAN BAR ASSOCIATION.

**Barbados,** most easterly of the British West Indian colonies; language, English; capital, Bridgetown (pop. 54,234); governor, Sir Mark A. Young. The area is 166 sq.mi.; population (official estimate, 1936), 188,294 with 71% negro, 22% mixed, and 7% white. Government is administered by an appointed governor and council, and a representative assembly. Barbados has 24mi. of railways and ample external steamer communication. Imports in 1936 totalled £2,004,484, chiefly from Great Britain (42.7%), Canada (14.1%), and the United States (10.4%); exports, chiefly sugar (65%), were £1,493,335, largely to Canada (56.2%) and Great Britain (32.2%). Sugar is the chief crop, with cotton production on the increase. The monetary unit is the pound sterling. Revenues for the year 1936-37 were £483,143 and expenditures, £460,870. Barbados has 126 elementary schools (enrolment 26,117) and several secondary schools. Codrington college, near Bridgetown, has high standing.

**Barbour, Clarence Augustus** (1867-1937), American clergyman who had served since 1929 as tenth president of Brown university. Born in Hartford, Conn., April 21, 1867, he was graduated from Brown in 1888 and from the Rochester Theological seminary three years later. His first charge was as pastor of the Lake Avenue Church, Rochester, N.Y. From 1909-15 he was associate secretary for the International Committee of Y.M.C.A.'s of North America. Called to the Rochester Theological seminary as professor of homiletics in 1915, Dr. Barbour acted as its administrator until 1928. His administration of Brown university was marked by emphasis on high scholastic standards and by enlarged opportunities for study. Among his writings were *The Bible in the World of Today* (1911) and *Making Religion Efficient* (1912). He died in Providence, R.I., Jan. 16, 1937.



**Barcelona**, a city and seaport of Spain, capital of a province of the same name, and former capital of Catalonia, is situated on the north-east coast, about 73mi. S. of the French frontier and 430mi. by rail E.N.E. of Madrid; pop. (est. Dec. 31, 1934): 1,148,100.

Barcelona's history during 1937 was dominated by the civil war, the city having been, since the outbreak of war (July 18, 1936), a stronghold and rallying-point of the Government forces, and, since Nov. 1, 1937, the temporary seat of the Government, this having moved from Valencia for economic and strategic reasons. In the early months of the war, it was the scene of more than one anarchist "terror," in which churches were rifled and priests slain, and early in Feb. 1937, a number of spies, including Italians, were captured. On April 4, after a week's crisis, the Catalonian president formed a new cabinet; but on May 5, street fighting having taken place with over 100 killed, this was replaced by a directorate of four. The town suffered much from Insurgent air-raids, but no rebel force ever came near it on land.

**Barium.** Although various barium minerals, chiefly the sulphate or carbonate, are mined to the extent of some 750,000 tons annually, and used in industry, it is only within the past few years that barium metal has become an article of commerce. The metal has high electron-emitting properties, and is used as a constituent of alloys for making spark plug terminals and similar equipment, and as a "getter" in radio tubes, for the purpose of removing the last traces of oxygen. The metal is now available at about \$5 per pound, or less, depending on quantity.

**Barley.** World production in 1937 was estimated by the International Institute of Agriculture at 1,117,099,000bu. as against 1,067,551,000bu. in 1936, excluding Russia. The 1937 crop in Europe was 530,348,000bu., compared to 577,373,000bu. in 1936. In Asia the Institute's estimates are 187,702,000bu. for 1937 and 166,403,000bu. for 1936; in Africa, 83,000,000bu. in 1937 and 114,401,000bu. in 1936, while for the last two harvests in Argentina the figures are 29,855,000 and 28,530,000 bushels. In Canada the 1937 crop was approximately 87,781,000bu. and 71,922,000bu. in 1936. In the United States the Department of Agriculture estimated the 1937 production at 219,635,000bu., which is 49 per cent larger than the short crop of 147,475,000bu. in 1936, and 22 per cent below the five-year average (1928-32) of 281,237,000 bushels. No figures for Russia are available, except that the average annual production from 1931 to 1935 was 303,607,000 in the U.S.S.R.

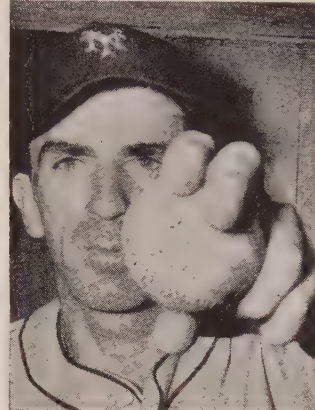
The barley crop of the United Kingdom in 1937 was the smallest on record, totalling about 30,500,000bu., or 3,700,000bu. under the production of 1936. In contrast to this smaller production of malting barley, beer consumption in England increased 6.75 per cent over 1936 in the five spring and summer months of April to August 1937, which was the fifth consecutive year beer consumption has increased in England. In Germany the 1937 crop was 162,886,000 bushels. That of 1936 was 156,122,000 bushels. Turkey's barley yield was 104,949,000bu. in 1937 and 105,810,000bu. in 1936. The crop in Poland in 1937 was 58,791,000bu. and 64,367,000bu. in 1936. (See also CEREALS.)

(S. O. R.)

**Barrie, Sir James Matthew** (1860-1937), Scottish playwright and author, who created the character Peter Pan. A detailed discussion of his life and works appears in the *Encyclopaedia Britannica*, vol. 3, p. 140. He had been rector of St. Andrews University, chancellor of Edinburgh, president of the Society of Authors, and a member of the American Academy of Arts and Letters. His most

recent play, *The Boy David*, was first produced in London in 1936. His death occurred in London, June 19, 1937.

**Baseball.** The climax in baseball in the year 1937 came in the fall in the world's series, the sport's most important annual fixture. The New York Yankees of the American League and the New York Giants of the National League met for the world title. The Yankees emerged victorious, scoring four games to one, thus winning their second consecutive world series and their sixth in the history of the club. The series came close



CARL HUBBELL, ace pitcher of the New York Giants, demonstrates his favourite hold

to being a clean sweep for the Yanks. They won both first and second games by a score of 8-1 in the Yankee Stadium. The third game was played at the Polo Grounds; but even on their home stamping grounds the Giants still seemed unable to stem the rushing tide of Yankee victories. The Yanks won the third game, 5-1. Then, the Giants recovered sufficiently to extend the series another game by taking the fourth contest, 7-3, but yielded the championship the next day, 4-2.

The Yankees, managed by Joseph V. McCarthy and owned by Colonel Jacob Ruppert, won the pennant in the American League with comparative ease, enjoying a margin of 13 games over the Detroit Tigers, their nearest pursuer. In third place were the Chicago White Sox, then the teams of Cleveland, Boston, Washington, Philadelphia and St. Louis, in that order. Not so easy was the Giant championship of the National League. In fact, the race down the homestretch was one of the most heated in years. The Giants, piloted by William Terry and owned by Horace Stoneham, drew ahead in the closing stages, snatching the pennant from the Chicago Cubs, who finished in second place, three games behind the leader. The other clubs in the National League finished in this order: Pittsburgh, St. Louis, Boston, Brooklyn, Philadelphia and Cincinnati. For the Yankees, it was their ninth league pennant; the third under McCarthy's management; the ninth under the ownership of Colonel Ruppert, and it tied them with the Philadelphia Athletics, the only other American League team ever to win the escutcheon nine times.

By winning the National League pennant, the Giants scored their second successive triumph, brought home the flag for Manager Terry the third time in his five complete campaigns as pilot, and made possible an all-New York series for the fifth time in the history of major league baseball.

**Comparative Statistics.**—The effectiveness of American League pitching and batting was evident throughout the season. At the fifth annual All-Star game in Washington, D.C., a composite team of American League players defeated a composite National League nine by a score of 8-3. The game, for which President Roosevelt threw out the first ball, attracted 32,000 spectators and yielded proceeds of \$28,475 for the fund maintained for indigent baseball players. Another example of the American League's batting strength was apparent in the number of home runs hit during the regular season. American League batters accounted for 806 home runs while the National League hitters drove 623. The individual leaders in home runs were Joseph DiMaggio of the Yankees with 46 and Melvin Ott of the Giants with 31.



The best all-around batting average for the season was made by a National League player, however, Joseph Medwick of St. Louis Cardinals finished with a percentage of .374. In the American League, the batting leader was Charles Gehringer of the Detroit Tigers, who batted .371. At the finish their standings were as follows:

	Games	At Bat	Runs	Hits	Percentage
Medwick .....	156	633	111	237	.374
Gehringer .....	144	564	133	209	.371

Carl Hubbell of the New York Giants had the finest pitching record in the National League, while John Allen of Cleveland led the American League hurlers. Their comparative standings for the season follow, in games pitched, games credited as won, and games charged as lost:

	Games	Won	Lost	Percentage
Hubbell .....	39	22	8	.733
Allen .....	24	15	1	.938

Only one major league pitcher was able to achieve a no-hit, no-run game during 1937. Bill Dietrich of the Chicago American League team accomplished this feat in a game with the St. Louis Browns in Chicago on June 1. He allowed only two bases on balls. One batter who faced him reached first base on an error. Organized baseball enjoyed in 1937 one of its most financially successful seasons. Throughout the regular major league campaign, a total of 9,500,000 persons saw the 16 major league clubs in action, bringing in a return of approximately \$14,250,000. Both the New York Yankees and the Detroit Tigers topped the million mark in total attendance at regularly scheduled league contests. The world series, lasting for five games, attracted a total of 238,142 paid admissions which brought the gross receipts at the gate to \$985,994, one of the highest figures for a five-game series and one of the best financial returns for any world series regardless of the number of games. The world series money was apportioned as follows: Commissioner's share, \$147,899.10; players' share (figured only on the basis of returns from the first four games), \$417,305.97; clubs' share, \$210,394.46; leagues' share \$210,394.46. Major league salaries continued high, although not quite at the peak reached by the stars of the period between 1923-29. Lou Gehrig of the Yankees received \$35,000 for the season, one of the biggest pay-checks in the sport for a player or club manager.

**The Minor Leagues.**—Minor league baseball also brought to a conclusion a highly successful season by its own little world series. In this minor league baseball classic, the Newark (N.J.) Bears of the International League met the Columbus (Ohio) Red Birds of the American Association. The Bears won the series, four games to three. It was a startling upset as the Columbus nine had won three of the series games before Newark had won one. Then the latter team clicked off four victories in a row. Newark reached the little world series by defeating Baltimore (Md.) in the International League play-offs. Columbus qualified to represent the American Association by winning the race in that circuit by the narrowest margin in its 36-year history. Columbus finished with a one-game margin lead over Toledo. Minneapolis was third and Milwaukee, fourth.

In other minor league competition, Fort Worth of the Texas League vanquished Oklahoma City to win the Texas League pennant. Little Rock of Little Rock, Ark., won the Southern Association flag. Then these two teams—Fort Worth and Little Rock—met to decide the Dixie Series Championship, which was won by Fort Worth. The San Diego (Calif.) Padres captured the championship of the Pacific Coast League, finishing third in the regular season, then winning the play-offs. The Elmira (N.Y.) Pioneers excelled in the New York-Pennsylvania League.

**College Baseball.**—The popularity of baseball extended to the

campuses of leading American colleges and the sport enjoyed a colourful season. Yale university won the Eastern Intercollegiate Baseball League title for the first time in five years. The Elis defeated Harvard, 7-6, in a 15-inning encounter at New Haven Conn. Harvard was runner-up in the league, Dartmouth was in third place and the University of Pennsylvania, fourth. The Big Ten Conference, embracing college teams in the Middle West, saw a heated race in this favourite sport. The team from the University of Illinois won the Conference baseball championship. With the exception of these two prominently organized college baseball circuits, other universities maintain baseball teams playing full schedules with other colleges but not participating in any established league. The baseball teams of Fordham, Duke, Long Island university, Holy Cross, Lehigh, Lafayette and countless other American colleges reported successful campaigns in 1937.

It is impossible to estimate the number of teams made up of boys and young men who play regularly on open fields throughout the United States. In fact, from these very improvised diamonds come many of the major league stars of future years. Probably the greatest sustained growth of baseball during the past year was noted on two divergent fronts: the sandlots of the United States, and the athletic fields of Japan. In Japan, the popularity of baseball has continued apace and the sport may soon become the national pastime. One reason is the series of barn-storming trips made by many American major league stars during numerous winter seasons. Exhibition games throughout Japan by these players have served to familiarize the Japanese people with the game. In the last year a few American college teams also have visited Japan for games there with the teams of Japanese universities. (J. P. D.)

**Basic English:** see UNIVERSAL LANGUAGE.

**Basketball,** originated in 1891, is played in 58 countries and is growing in popularity. Until 1937 the ball was put in play at the beginning of each period and after each goal was made by tossing it up between two opposing players thus giving each team an equal opportunity of obtaining the ball. The new 1937 rules read:—"After a goal from the field, any player of the team scored upon shall put the ball in play from any point out of bounds at the end of the court where the goal was made." Other changes were: blocking was differentiated from screening—in blocking there must be personal contact; the centre line is to be treated as any boundary line in determining in which court a player is standing; and in high school basketball the overtime periods are limited to two, and five timeouts are allowed each team in any game. Changes in women's rules allow a player to take the ball away from an opponent and permit a substitute to communicate information immediately. In 1937 there were 10,000,000 spectators (Grantland Rice estimate) and 60,000 competitive teams (Ferris estimate) in the United States. The college champions were:

#### INTERCOLLEGIATE CONFERENCE CHAMPIONS

Eastern .....	Pennsylvania
Western .....	Minnesota
Big Six .....	{ Nebraska } tied
	{ Kansas }
South Eastern .....	Georgia Tech
South West .....	So. Methodist
Missouri Valley .....	Oklahoma A. & M.
Border .....	New Mexico Aggies
Rocky Mountain .....	Montana State
Pacific Coast .....	Stanford

(J. N.A.)

**Basutoland.** Basutoland is entirely surrounded by territory of Union Provinces, Orange Free State, Natal, and the Cape. Area, 11,716 sq.mi., lying between 28°35' and



30°40' S. lat., and 27° and 29°30' E. long. Altitude 5,000 to 11,000 feet. Basutoland is a British Colony, administered, under the South African High Commissioner, Sir William Henry Clark, K.C.S.I., K.C.M.G., by a resident commissioner. Chiefs administer justice in their own courts. Capital, Maseru.

**Population** (census 1936): Bantu, 660,650; Europeans, 1,434; coloured, 1,600. Elementary education is available to all, and over 70% of school age are enrolled: there are one Government and ten mission institutions for higher grades.

**History.**—A loan of £160,233 was received in 1935 from the Colonial Development Fund for anti-erosion work, and a further loan in 1936 for an ecological survey and grassland experiments.

**Trade and Communications.**—The territory is linked with the railway system of South Africa by a short branch line to Maseru. Since 1936, regular road transport service by South African railways has been established. Chief exports are wheat, wool, and mohair; total exports (1936), £302,193; imports, £712,125.

The deficit between exports and imports is filled by wages earned on the Rand mines, on which all male Basutos spend some time. At the close of 1936, 45,399 were so employed.

(W. M. MA.)

**Bathysphere:** see MARINE BIOLOGY.

**Battleships:** see LONDON NAVAL CONFERENCES; NAVIES OF THE WORLD; REARMAMENT.

**Bauhaus, The New.** This American School of Design was opened October 18, 1937 in the family home of Marshall Field, 1905 Prairie Avenue, Chicago, which was presented to the Association of Arts and Industries by Marshall Field, III. The school was organized and is operated by the Association of Arts and Industries, a non-profit organization founded in 1922 and composed of manufacturers, public spirited people and designers. The New Bauhaus continues and expands the plan of the former Bauhaus founded in Weimar in 1919 by Dr. Walter Gropius. In the present school Dr. Gropius' method of close co-operation between art, science, and technique is the basic plan. Dr. Gropius, now professor of Architecture at Harvard university, is the advisor of the New Bauhaus. L. Moholy-Nagy, one of Dr. Gropius' closest collaborators at the Bauhaus in Dessau is the director of the school. Professor Moholy is not only a painter of international fame but has worked with industrial firms in glass, metal, textiles and wood and is equally skilled in photography and films. Guest lecturers from the University of Chicago in charge of the sciences are: Professors Ralph W. Gerard, Carl Eckart and Charles W. Morris, and the following are members of the faculty: Lecturer, Basic Design Workshop: L. Moholy-Nagy; Head of Basic Design Workshop: Hin Bredendieck; Technician Basic Design Workshop: A. Schlitz; Modelling: Alexander Archipenko; Music and Building Musical Instruments: David Dushkin; Drawing and Light Studio: George Kepes; Photography: Henry Holmes Smith. The school opened with 35 students from States all over the country. The second semester enrolled 20 more, again from distances and a night class opened with the second semester with an enrolment of 20. The officers of the Association of Arts and Industries are: President E. H. Powell, Vice-President Glenn G. Hayes, Treasurer Frank Milhening, Secretary and Executive Director Norma K. Stahle.

(L. M.-N.)

**Bauxite.** An increasing demand for aluminium has stimulated the production of bauxite in a number of countries that were formerly only minor producers, particularly Yugoslavia, Hungary, Italy and the Soviet Union, but has not yet materially

*World Production of Bauxite*  
(Metric tons)

	1929	1932	1934	1935	1936
Br. Guiana . .	220,119	85,800	65,917	116,056	212,681
France . . . .	666,348	401,430	528,400	512,800	648,500
Hungary . . . .	389,152	111,558	184,991	211,079	329,000
Italy . . . . .	192,774	86,553	131,266	170,064	314,870
Surinam . . . .	219,603	126,513	103,338	112,682	120,000
U.S.S.R. . . . .	..	37,400	61,000	132,000	?
United States .	371,648	97,895	160,371	237,666	377,976
Yugoslavia . . .	103,366	67,086	84,828	216,197	292,174
Total . . . . .	2,185,000	1,017,000	1,329,000	1,746,000	2,450,000

affected the output of the other large producers; the increased output of the last two is largely for home consumption, but that of the first two goes largely to Germany. Other uses are still below the 1929 level of consumption. On the average, about 60% of the output is used for metal, while the remainder goes into chemicals, abrasives, cement and refractories. (G. A. Ro.)

**Baylis, Lilian Mary** (1874-1937), British theatre manager; born in London, May 9. In early life she taught the violin and other stringed instruments in South Africa, but, after returning to England in 1898, joined her aunt in the management of the Old Vic theatre in South-east London. She became sole manager of this theatre in 1912, and won herself lasting fame by staging all Shakespeare's plays and many other classics, as well as opera in English, at prices within the means of the humblest theatre-goer. In 1931 she took over the management of the re-opened Sadler's Wells theatre in addition, and made of this a North London counterpart of the Old Vic. She was made a Companion of Honour in 1929. She died in London, Nov. 25, 1937.

**Beans, Dry.** Higher yields per acre and a larger harvested area of 1,794,000 acres produced a crop of 14,300,000 bags, or 1,430,000,000 pounds, of edible dry beans in the United States. Together with an estimated carryover of 850,000 bags from the 1936 crop the total 1937-38 domestic supply of dry beans is 24 per cent larger than a year ago and 14 per cent above the five-year average. In 1936 the United States imported 587,000 bags. The 1937 acreage was 15 per cent more than that of 1936. (S. O. R.)

**Bechuanaland Protectorate** is bounded S. and E. by the Union of South Africa, N.E. by Southern Rhodesia, N. by Zambesi and Chobe river, and W. by South-west Africa. Area estimated at 275,000 sq.mi.; mean altitude 3,300 feet. Bechuanaland is administered by a resident commissioner, under the high commissioner for South Africa, Sir W. H. Clark, K.C.S.I., K.C.M.G. The chiefs retain their status and hold tribal courts: headquarters of administration is at Mafeking. Population (census 1936): Africans, male 129,259, female 130,805; Europeans, male 1,064, female 835. A portion of each unit of tax goes into a Native Fund for social services, from which £11,717 was voted in 1936 for education. The tribes are Christians. Communications are primitive. The South African railways line to Southern Rhodesia passes along the eastern border, but about 50mi. west of the railway the tracks become unsuitable for motor traffic. Agricultural production is limited by lack of rainfall. Chief exports, 1936: hides and skins. Value of cattle £105,072, sheep and goats £9,452, butter £11,457, hides and skins £23,777, kaffir corn £21,852. Value of gold mining output, 1936, £117,061. Imports (1936) were £363,270, and exports £347,858. (W. M. MA.)

**Beef:** see MEAT.



## Bee-keeping.

Except in British Columbia, California, Texas, Louisiana, Kentucky, Tennessee and Arkansas, the North American honey crop was below normal and under the 1936 production by percentages ranging from 30 to 60 in different States and Provinces. There are no reliable figures as to total production since so much of the crop is sold and consumed locally. Annual per capita consumption of honey is estimated at about 16 ounces in the United States and four ounces in Great Britain. There are between 600,000 and 800,000 bee-keepers in the United States. A revival of bee-keeping during the last ten years in Great Britain has resulted in doubling honey production which is now about 40,000 hundredweights annually. For some years, and especially since the more general use of motor trucks, many American bee-keepers have taken their apiaries to Florida and other Southern States during the winter months. The profitability of this practice is now disputed, except as to its recreational value to the bee-keeper. Investigations by the *American Bee Journal* indicated that in many sections of Canada and the United States colonies entered the winter months with inadequate food supplies. (S. O. R.)

**Beer:** see BREWING AND BEER.

**Beet Sugar:** see SUGAR: *Beet Sugar*.

## Belgian Congo,

a Belgian colony in central Africa. Included with the Belgian Congo are, as a mandate, the former German East-African districts of Ruanda and Urundi. Ruler, the king of the Belgians represented by a governor-general (Pierre Ryckmans, appointed 1934). Area: Congo 927,000 sq. mi.; mandated territory 20,500 square miles. Population: Congo, Europeans 18,683, natives about 11,000,000; mandate, Europeans c. 890, natives c. 3,385,000. Leading towns: Léopoldville, the capital (4,447), Elizabethville (5,841). There are 14 schools for Europeans, and 11 State schools and 4,217 subsidized schools for Africans. In August 1937 discussions took place at Léopoldville between the Belgian authorities and the defence minister of the Union of South Africa regarding a projected air service between Johannesburg, Léopoldville, and Kisumu. An increase in the Congo army, and the creation of a Colonial air force, were under discussion in Belgium at the end of 1937.

The chief product is copper. Production in 1935 was 107,682 tons. Other minerals are radium, and diamonds (3,812,023 carats in 1935). There are European coffee and cocoa plantations, and native cotton plantations which produced (1935) 76,333 tons. Exports in 1935 totalled frs. 1,202,943,444, and imports frs. 613,573,782. The unit of currency is the franc, equalling one-fifth of the belga. The Banque du Congo Belge issues notes and copper-nickel coins.

## Belgian Literature.

Perhaps the most significant feature of 1937 has been, on the one hand, the attempt to be independent of Paris, and, on the other, the honours paid to Belgian literature by Paris. Thus, many books have appeared in Brussels, particularly from the presses of the Belgian "Renaissance du Livre." The *Académie royale de langue et de littérature françaises de Belgique*, with greatly increased activities, was, at the end of the year, received with much ceremony in Paris by the *Académie française*. The *Prix Goncourt* was awarded for the first time to a Belgian, namely Charles Plisnier. The *Congrès des écrivains étrangers de langue française*, held in the summer in Paris, was presided over by a distinguished Belgian, Maurice Wilmotte. Finally, should be recorded the literary homage of the whole world, offered, with the co-operation of the Belgian Broadcasting Corporation, to Maurice Maeterlinck on

the occasion of his 75th birthday.

In poetry should be cited Bodart's *L'office des ténèbres*, Pierre Bourgeois' *Poèmes*, Carême's *Petite Flore*, du Dy's *A l'amie dormante*, Heux's *Symphonie Apollon*, Kochnitzky's *L'ermite entouré de feux*, Thiry's *Marchands* (containing short stories also), and Vivier's *Au bord du temps*. *Les Cahiers blancs*, a review devoted to poetry, philosophy, and high intellectualism, was founded at the beginning of the year by a group of young writers.

Belles-lettres and history were also represented in large number. Maeterlinck published *L'Ombre des Ailes*. Lameere studied *L'Esthétique de Benedetto Croce*, and de Reul *L'oeuvre de D. H. Lawrence*. Laurent wrote an erudite book on *La Draperie des Pays-Bas en France et dans les Pays méditerranéens*. Pirenne's *Mahomet et Charlemagne*, Moulin's *De Robespierre à Lenine*, and two books on King Albert, one by Cammaerts and the other by d'Ydewalle, should be indicated. Modern literature is studied by Gilsoul in an important book, *La Théorie de l'Art pour l'Art chez les écrivains belges de 1830 à nos jours*, and by Goffin in *Rimbaud vivant*. Poupeye writes on *Les Théâtres d'Asie*, and the "profils littéraires belges" has been enriched by several studies of contemporary authors. Father Maréchal published his collected thoughts on mysticism, in *Études sur la Psychologie des Mystiques*.

Amongst many novels, the following may be chosen: Charles Plisnier's *Faux-passeports*, Bosschere's *L'obscur à Paris*, Marie Gevers' *La Ligne de Vie*, Tousseul's *La Roche de la Mère-Dieu*, Franz Helens' *Le Magasin aux Poudres*, and two war books—Deauville's *Les dernières Fumées* and Linze's *Enfants bombardés*.

There were many notable works published in the Flemish language. In poetry should be mentioned Helderberg's *Dooitendans*, Verbeeck's *De Dwaze Bruij*, Vertommen's *Peillood*, and van de Wijgaert's *De Purperen Vlock*. Teirlinck wrote an important play, *De Ekster op de Galg*. Among the numerous novels the following were outstanding: Elschot's very well written *Pensionen*, Roelants' *Alles Komt terecht*, de Pillecijn's *Schaduwten*, Streuvels' *Levensbloesem*, Walschap's *Een Man van Goeden Wil*, and Ridwit's *Landrotten*. Two collections of short stories must not be omitted: Toussaint van Boelaere's *De Doode die zich niet verhing* and Berghen's *De Kleine Isa*. (S. L. EN.)

## Belgium

(Fr. *La Belgique*; Flem. *België*), North-west European kingdom, member of the League of Nations. Bounded N. by Holland, E. by Germany and Luxemburg, S. by France, and W. by the North sea. Capital, Brussels (*q.v.*). Ruler, King Leopold III (*q.v.*). National flag, black, yellow, and red, in equal vertical stripes.

**Area and Population.**—The area is 30,506 kilometres (11,775 sq. mi.), divided into 9 provinces, thus:

Province	Area (sq. mi.)	Population (1935 estimate)	Density (per sq. mi.: 1935)
Antwerp . . . .	1,104	1,224,337	1,109
Brabant . . . .	1,267	1,745,357	1,378
Flanders, East . .	1,147	1,181,728	1,030
Flanders, West . .	1,248	946,862	759
Hainaut . . . .	1,436	1,253,012	873
Liège (with Eupen and Malmédy) . .	1,525	971,937	637
Limburg . . . .	930	397,610	428
Luxemburg . . . .	1,705	222,808	131
Namur . . . . .	1,413	356,289	252

The census population (Dec. 1930) was 8,092,004, an increase of 0.84% per annum, (1935 figures: 8,299,940—4,103,573 males; 4,196,367 females). There is full religious liberty, no church being established. A majority profess Roman Catholicism; Protestants, Jews, and Anglicans are represented.



## BELGIUM

There are two main stocks, the Walloons, speaking French (42%) and the Flemings, Flemish, allied to Dutch; a small proportion speak German. The educated Belgian usually knows all three languages, and often English.

At least one primary school must be maintained by every commune, at its expense, relieved by contributions from the State and province. In 1935, 8,599 primary schools recorded 968,193 pupils; in 1934, 150 State secondary schools (100 for boys), 44,859; in 1935-36 the universities of Brussels, Louvain, Ghent (from 1930 a Flemish university), and Liège, 10,727.

The largest town is Brussels (exceeding 1,250,000), followed by (1935 populations): Antwerp (273,772), Ghent (165,269), and Liège (162,272). Mechlin, Borgerhout, Deurne, and Bruges exceeded 50,000, and seven others 40,000 each.

**History.**—Government is in the hands of the King and a parliament of two chambers, and is administered by a Prime Minister and a cabinet of 14 ministers. Universal adult suffrage and proportional representation are in force. The complement of the Chamber of Representatives, fixed by law prior to the elections of May 1936, was 202; the parties thereafter stood thus: Socialists, 70; Catholics, 63; Liberals, 23; Rexists, 21; Flemish Nationalists, 16; Communists, 9. In the Senate (167) proportions were similar.

The passage in June of the bill granting an amnesty to separatist Flemings, in respect of their efforts, during the World War, to divide Flanders from Belgium, released forces leading eventually to the downfall of the Government. The Flemish nationalists severed their pact with the Rexists. Ex-service-men's associations appealed to the King for a referendum on the amnesty question, declined on grounds of unconstitutionality. M. Léon Degrelle (Rexist), whose seat M. van Zeeland, the Catholic Prime Minister,

had won at an April by-election, levelled personal accusations at him and other ministers, one of whom replied with a successful action for slander. Liberal opinion forced another minister's resignation and, notwithstanding a vote of confidence, passed in September after his return from a mission of economic exploration to the United States, M. van Zeeland resigned on Oct. 25 from the premiership and parliament, seeking freedom to investigate the affairs of the National bank, and to clear himself of alleged complicity therewith.

Attempts to form a cabinet were protracted. Not till Nov. 24 did M. P. E. Janson (Liberal; formerly Minister of Justice; age, 65) take office as Premier, supported by 6 Socialists, 5 Catholics and 2 Liberals—the first Liberal ministry since 1884.

In domestic affairs a significant event was the rejection by the Socialist party of the Communists' "United Front." As to foreign relations, King Leopold's "neutrality" conversations in London (March) were followed by the release of Belgium from her reciprocal Locarno obligations, but with renewal of the Anglo-French guarantees against aggression. Later a German note guaranteed the inviolability of Belgium. The King paid other visits to England. A year's trade agreement was signed with the Union of South Africa, and one with France allocating traffic between Channel ports. Belgium's Oslo concessions (*see* NORWAY) were extended to France and U.S.A.

**Trade and Communications.**—Though 1935 saw a slight drop, more than half the land was under cultivation, pasturage and cereals leading. Among materials derived from natural resources, the output of wrought steel was the most valuable; this and pig-iron showed a continual rise to 1936. Coal-production, after a drop in 1932, increased steadily till 1935.

The 1930 figures showed close upon 2 million persons engaged in industries, in the following order: metals, textiles, mining, building, transport. More than half a million were commercially employed. In 1936, imports totalled frs. 21,505,682,000 (£146,300,-

KING LEOPOLD III of the Belgians escorted by King George VI of Great Britain to Buckingham Palace for a visit of state November 16-19, 1937





ooo), and exports frs. 19,944,275,000 (£135,700,000); an increase in both cases. Anglo-Belgian trade rose by 29% in exports from Great Britain, and by 17.5% in imports into Great Britain of iron and steel bars, flax, glass, bricks, cotton piece-goods, zinc, etc.

On Jan. 1936, there were 107 ships in the mercantile marine (247,344 tons). Road and railway facilities showed little change since 1935, when the Brussels-Antwerp line was electrified. Telegraphs and telephones showed slight increases. In 1935, 216 radiograph stations handled 22,056 messages; the external air services carried 65,728 passengers and 1,414,272 kilograms of merchandise.

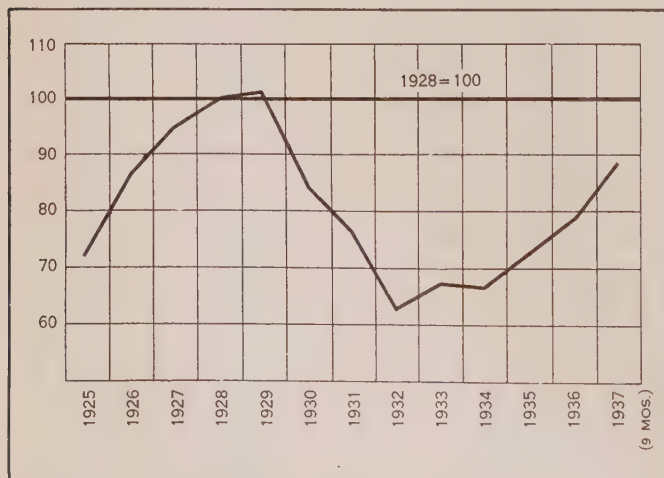
**Finance and Banking.**—The franc continues the unit of domestic currency, but the use of the belga (=5 paper francs; at par, 35 belgas=£1), stabilized (March 31, 1936) at 72% of its former gold content, is obligatory in foreign exchange transactions.

The 1937 budget showed an income of frs. 10,736,424,000 (£73,037,000; increase: £2,088,700), rather under one-third raised by direct taxation, and expenditure of frs. 10,565,569,000 (£71,180,000; increase: £686,700). Direct taxation averages frs. 370 per head over the entire population. On Sept. 30, 1936, the total public debt was frs. 55,799,000,000.

The National bank, privileged to issue currency, had, on Feb. 11, 1937:

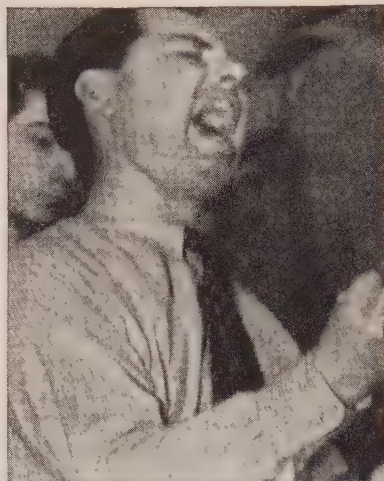
	Assets	Liabilities
Gold and silver . .	3,740,388,000 belgas	Notes in circulation: 4,493,282,000 belgas.
Securities . . . .	1,355,861,000 belgas	Current accounts: 822,030,000 belgas.
Totals . . . . .	5,096,249,000 belgas	5,315,312,000 belgas.

In the savings bank on Dec. 31, 1935, there were 5,566,414 accounts, totalling frs. 10,808,660,000.



BELGIUM: Industrial production index (*The Annalist*)

The army (part voluntary, part conscript; 18 months' service with the colours) had (1936) 4,460 officers and 63,000 other



LÉON DEGRELLE, 30, leader of Belgium's Fascist party

ranks; the air force, 210 aeroplanes. The military expenditure provided was frs. 886,400,000. The police had 157 officers, 6,289 other ranks. There is no navy, but one fisheries protection vessel is maintained. (See also SOCIALISM.)

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**Benefactions:** see DONATIONS AND BEQUESTS.

**Benes, Edward** (1884- ), president of the Czechoslovakian republic. For a biography, see *Encyclopædia Britannica*, vol. 3, pp. 402-3. From the formation of the Provisional Government in 1918 until he succeeded Masaryk as president, Dec. 18, 1935, M. Benes was foreign minister; he was one of the founders of the Little Entente, a signatory of Locarno (1925), and in 1935 president of the Council of the League of Nations, of which he was always a staunch supporter. A life-long Socialist, M. Benes was much occupied during 1937 in maintaining the democratic status of his country and in resisting attempts at Nazification by Henlein and the Sudeten Deutsch Party (see CZECHOSLOVAKIA).

**Bequests:** see DONATIONS AND BEQUESTS.

**Berlin,** residence of the Hohenzollern electors, kings and emperors from 1442 to 1919 and capital of the German Reich since 1871, is also the largest and most important city of Germany. Reorganized in 1920 to include several suburbs, Greater Berlin in 1933 had an area of 332 square miles and a population of 4,242,501. Aside from its political advantage as a seat of the Prussian and German Governments, its commercial importance has been favoured for more than two centuries by its situation on the River Spree, affording cheap water communications through the wide-reaching German system of canals; later it became the centre of the German railway network, and more recently the central point of Germany's widely developed commercial air service. At its Tempelhof Airport, enlarged during the winter of 1937-38 to be the largest in Europe, 102 big aeroplanes arrive and depart every 24 hours. A great stadium and sport field was built in West Berlin for the Olympic Games of 1936, while at the same time a gigantic Reichsbank, Military Air Service building, and other large public works were rising to completion in the heart of the city. Two immense railway terminals, one on the northern and the other on the southern outskirts, are planned to supersede the ten existing but inadequate railway stations; a connecting tunnel will enable trains from Rome and the south and west to pass under Berlin and continue to Copenhagen and Warsaw and other points north and east. New automobile highways will converge at Berlin, but will also circle the city so that through traffic will not congest the capital. Hitler intends to transform the city during the next twenty years by a grandiose reconstruction program. At the laying of the cornerstone of the Faculty of Military Science, the first building of the new Berlin university, he declared on Nov. 27, 1937: "It is my unalterable determination to ornament Berlin with those streets, structures and public squares which will make it through all the ages the worthy capital of the German Reich. The size of these projects will not be measured by the needs of 1937. They will be planned with the knowledge that it is our duty to prepare a city that will stand a thousand years, worthy of the immeasurable future of a nation with a thousand years' history."

For the Berlin of earlier days, see the article BERLIN in the *Encyclopædia Britannica*. (See also HITLER, ADOLF.) \*

(S. B. F.)



**Bermuda,** a British insular colony 580 miles east of Cape Hatteras; language, English; capital, Hamilton (pop. approx. 3,000); governor, Lt.-Gen. Sir R. J. T. Hildyard. The area is 19½ sq.mi.; population (1931 census) 27,789; (official estimate, 1936), 30,552, including 59% negroes. The colony has an appointed governor and partly elected legislature. Suffrage is restricted to male free-holders. In Feb. 1937, the legislature rejected a very limited woman's suffrage. External communication is by Government-subsidized steamers. Test flights for regular aeroplane service were made in May 1937 and service started late in the year. The backbone of the colony's economy is the tourist trade, from which it derives 80% of its revenue. Imports, primarily foodstuffs and manufactured articles, in 1936 aggregated £1,891,676, over 50% from the British Empire (especially Great Britain and Canada), due to Imperial Preference. Dissatisfaction with the results of Imperial Preference was strongly manifested in 1937. Exports in 1936 were £135,812, less than half the 1934 total, with almost 40% to the British Empire. Only £55,820, chiefly in vegetables, lily bulbs, and flowers, was local produce. The unbalance of trade is covered by tourist purchases. The monetary unit is the pound sterling. Government receipts in 1936 aggregated £431,399, and expenditures £412,141. Education is compulsory. Schools are private, but with heavy Government grants. Total school enrolment in 1936 was 3,736.

(L. W. BE.)

**Bessarabia,** the district of Rumania lying between the Pruth and Dniester rivers, and thus between Moldavia and the U.S.S.R. The U.S.S.R. has not yet formally recognized Rumania's sovereignty, but has of recent years accepted it *de facto*. The area is about 44,422 sq.km. Population (1930) 3,092,949, of which the largest single element is Rumanian; there are also Russians, Ukrainians, Poles, Bulgars, Turks, Tatars, Germans, etc. It forms the "Regional Directorate of Chişinau," with nine departments. Largest city: Chişinau (Kishinev) with a population of about 115,000; seat of a metropolitan bishopric.

**Best Sellers:** see PUBLISHING: *Best Sellers*.

**Bevin, Ernest** (1881— ), British Trade Union official, was born near Bristol. Working in the Bristol docks, he became prominent in the affairs of the Dockers' Union, and one of its local officials. Transferred to its head office after the World War, he leapt into prominence by his advocacy of the dockers' claim for higher wages before the Shaw Commission, and was nicknamed "The Dockers' K.C." In 1923 he took the lead in a movement to amalgamate all unions catering for transport workers into the Transport and General Workers Union; he became general secretary, and the union is now the largest in the world, with over 500,000 members. A member of the General Council of the Trades Union Congress since its inception after the War, Bevin was its president in 1937, in which year he settled the "Coronation Strike" of London busmen by suspending their committee and negotiating terms himself.

**Bible Society, American:** see AMERICAN BIBLE SOCIETY.

**Bicycling:** see CYCLING.

**"Big Apple":** see DANCING.

**Bilbao,** a seaport of Northern Spain, capital of the province of Biscay and the largest of the Basque towns (estimated population Dec. 31, 1934, 175,900), is on the River Nervion, 8mi. from its mouth and 148mi. N.N.E. from Madrid. Its commercial importance is due to the iron mines in the vicinity, and to its overseas trade. During the early months of the Spanish Civil War

Bilbao was held by the Government, but by April 1937, the Insurgents were approaching the city, despite the reinforcements of planes received from Barcelona and Madrid on the 8th. On the 23rd and 25th British food-ships ran the blockade and re-provisioned the city, but on the 28th—after Guernica—the Basque Government proclaimed the evacuation of all non-combatants. By the end of the month General Franco's forces were within 11mi.; on May 6 5,000 refugees left for France escorted by British warships, and on the 20th 4,000 children left for Southampton. On June 8-9 the town was severely bombed from the air, and on the 12th the outer ring of defences was pierced. Heavy fighting followed; on the 18th the suburbs were entered and the Government fled; on the 19th the old quarter fell to the Insurgents, and on the 20th the city formally surrendered and became the base for Rebel operations against Santander. (See also SPAIN, CIVIL WAR IN.)

**Billiards,** somewhat dormant of late in the United States, showed signs in 1937 of long-awaited rejuvenation. Championship tournaments were staged in various sections of the country. Amateur as well as professional contests were frequent, resulting in the appearance of new players. The colleges and universities favoured billiards on a larger scale than hitherto.

Throughout 1937 two names dominated the sport, Willie Hoppe and Ralph Greenleaf, a pair of New Yorkers. Hoppe, the perennial "boy wonder" of the green baize, at 50 years of age—he began playing forty years ago—accepted the challenge of Jake Schaefer of Chicago and placed the world's 18-1 balk-line championship in jeopardy in a 3,000-point meeting with the son of one of the game's immortals, Jake Schaefer, the elder. Hoppe, stroking more consistently than he has in recent years, emerged on top by a comfortable margin of 3,000-2,567. A week later Hoppe and Schaefer, playing for the championship of the United States, introduced the French game of 71-2 balk line to the American public. Competing at this new style in which the table is marked off with six courts or boxes, as compared to the nine squares drawn for 18-1 and 18-2,

Hoppe again prevailed, the final count here being 2,694-2,376. The title, however, was decided on a block basis, which made no difference in the outcome, since Willie's advantage in blocks was 8 to 4. Displaying his versatility, Hoppe, in the tenth block amassed a high run of 248, unfinished, for a new world's record. The previous standard for 71-2 balk line was 223, credited to Roger Conti of France.

Greenleaf regained the world's championship at pocket billiards last spring after having been out of competition for a period of four years. Returning to action, the 37-year-old cue expert fin-



WILLIE HOPPE, U. S. champion, who broke the world's record for a high run in balk-line billiards



RALPH GREENLEAF of New York regains the world's pocket billiards championship

ished the regular tournament schedule deadlocked for first place with Irving Crane, youthful newcomer from Rochester, N.Y., Andrew Ponzi of Philadelphia, an erstwhile titleholder, and Jimmy Caras of Wilmington, Del., the defending ruler. When a first round-robin play-off among the four resulted only in the elimination of Crane, a second was ordered and Greenleaf won twice.

The next titular tournament was held in Philadelphia in November and the termination of the schedule found Greenleaf and Crane in a two-way tie for the honours. This time Greenleaf came through with one of the most amazing performances of his long career and he crushed his opponent with a 125-to-minus-1 conquest in the play-off.

(L. Ef.)

**Great Britain.**—No games showed a more marked advance in 1937 than did the games of billiards and snooker. Competitive play in clubs, institutes, and public rooms reached a high-water mark in the history of the game. In addition, billiards and snooker were introduced into thousands more homes by way of the 6ft. by 3ft. tables. It is estimated that over 3,000,000 people played games on billiard tables every day in 1937.

The standard of play in the higher branches of competitive billiards and snooker showed a notable advance, particularly among the amateur players. A young Birmingham engineer, Kingsley Kennerley, playing in the final round of the Amateur Championship of Billiards, surpassed the previous best achievement by amateurs in making a break of 549; and Joe Davis, champion of the world at snooker, made a world record run of 135 points in one break at snooker.

Women players also made a notable advance, one of the professional players, Miss Ruth Harrison, a native of County Durham, making a new world record with a break of 197 at billiards.

On the legislative side of the game, the Billiards Association and Control Council, the governing authority for billiards, snooker, volunteer snooker, pool, pyramids, and Russian pool all over the world, introduced some minor alterations and additions to the rules, and continued its program for development of games played on a billiard table.

Overseas tours were undertaken by three of the prominent professional players, Davis visiting South Africa and Horace Lindrum and Melbourne Inman making a round-the-world tour, taking in a flying visit to Lindrum's home in Melbourne. (W. G. CL.)



**Bingham, Robert Worth** (1871-1937), U. S. ambassador to Great Britain, was born in Orange county, N. C., Nov. 8, 1871. His early career was as a lawyer in Louisville, Ky.; but in 1918 he turned to publishing with the purchase of the *Louisville Times* and *Courier Journal*. He was appointed to his diplomatic post in 1933. Known in England for his conformity with British customs and for his championship of Anglo-American co-operation, he advocated lower trade barriers and a stabilized currency until forced to resign his position because of an illness which resulted in his death in Baltimore, Md., Dec. 18, 1937.

**Biochemistry.** It is convenient to divide biochemistry into three distinguishable though interrelated parts: (1) the isolation and chemical description of those substances of which organisms are made; (2) the description of the processes in which these substances are involved; (3) the description of the manner in which these processes are linked together inside the cell, so that the products or the energy liberated by one action may be efficiently transferred to the next; or the manner in which the energy that is liberated by a chemical action is used for doing external work. The first part has occupied the attention of biochemists and chemists for many years, and is often mistaken for the whole of biochemistry. The second part, the description of processes, is at present the most important and fruitful part of the subject. The third part promises to advance rapidly in the near future; it is this advance that leads us to think that biochemistry will do even more in the future for the clarification of biological thought and the improvement of medical technique than it has done in the past.

**Proteins.**—Much work has been done in recent years on the purification of proteins; this is especially interesting in the case of those proteins which are, or are associated with, enzymes, antibodies, and viruses. Several plant viruses have been obtained in liquid crystalline states, and some enzymes; e.g., trypsin, pepsin, urease, and carboxy-polypeptidase, have been prepared as crystals with a high enzymic activity. It is very probable that some of these products are in the chemical sense pure, but there is as yet no direct evidence on the point. The study of these preparations and of other highly purified enzyme preparations suggests that true enzyme activity cannot be found in the absence of protein molecules, and these studies have given us no reason to abandon the old hypothesis that part of every enzyme molecule is protein.

**Sugars.**—Since Haworth's demonstration that the simple sugars generally contain the six-membered pyrane ring, there has been little change in our main conceptions of sugar structure. From the biochemical viewpoint very interesting work is being done on related substances such as desoxy sugars (in vitamin B<sub>2</sub>, some nucleic acids and some pharmacologically active glucosides) and the substances related to vitamin C. There is also a growing interest in the rôle of complexes containing amino-sugars and uronic acids in immunological reactions. It is now reasonably certain that many of the substances concerned, for example, in blood group reactions, in the serological specificity of the serum proteins and many bacterial antigens, in the curing of some anaemias and the control of blood clotting, are of this type. The methylation technique and the methods of X-ray analysis are, in the hands of many workers, throwing valuable light on the constitution of polysaccharides of structural (cellulose, chitin), metabolic (starch, glycogen), or immunological importance.

**Chemistry of Muscular Contraction.**—There is now substantial unanimity that the main problem is not so much how a muscle contracts, but how, having contracted, chemical work is done to make it relax again. The protein micellae in a resting skeletal muscle fibre can, very approximately, be compared to



stretched springs held by a catch; they are ready to contract quickly, and then need an elaborate system of chemical actions to supply energy to restore them to the resting state.

It is possible to consider the problem at many levels of complexity; the single twitch, the twitch followed by recovery, the repeated contraction of the muscle in the absence of oxygen, and the normal working of a muscle supplied with both glycogen and oxygen so that the action may go on more or less indefinitely with the conversion of glycogen to carbon dioxide. It would seem that the action that is in most intimate association with the return of the muscle to its resting state is the breakdown of adenylyl pyrophosphate to adenylic acid and phosphate either free or combined with some other substance such as glycogen. The large group of enzymic reactions which has been so patiently explored by Parnas, Meyerhof, and others is mainly needed for the reconstitution of this adenylyl pyrophosphate by the transfer to adenylic acid of phosphate and energy. These actions involve the addition of phosphate to and its removal from hexoses, trioses, three carbon acids and nitrogen containing compounds such as creatine, and they have been studied by a very large number of different techniques. The direct or indirect chemical estimation of either the appearance or disappearance of a component of the action is of course the most simple method of following that action, but it has the defect that it cannot be used with very small amounts of material nor when different actions follow one another rapidly. These complex processes may be fruitfully studied on systems which have been partly poisoned by the addition of iodoacetate or fluoride which affect only a few of the processes, and so allow the products of these actions which are unaffected to accumulate, or on systems from which essential co-enzymes or intermediates have been removed; *e.g.*, by dialysis. The actual sequence of processes during a twitch is most readily followed by physical methods and measurements of the heat production, volume, transparency, birefringence, colour, and electrical state of a fibre have thrown much light on the mechanism of contraction.

**Industry.**—Since the direction of development in any science is largely conditioned by the sources of money endowing it, the links between biochemistry and industry are to be found in those industries, such as brewing and tanning, which are concerned with the chemical manipulation of biological products. To a great extent the biochemist in industry has been given the unexciting task of standardizing products, and, in some cases, unfortunately, arranging for their more skilful adulteration. Sometimes the probable value to industry of fundamental research has been appreciated; *e.g.*, the exhaustive study by Raistrick and his colleagues of the complex substances which moulds, growing under various conditions, can produce from sugar, was carried out for many years in an industrial chemical laboratory. This work is too recent for its commercial significance to be assessed properly, but the analogous processes for the production of citric acid by mould action and the well known fermentation processes for the production of acetone and butyl alcohol seem to be very successful. The value of biochemical research is also appreciated by the leather, wool, and wheat-milling industries.

**Medicine.**—Apart from the more definite aspects of the relationship between biochemistry and medicine, referred to above, there is the even more important, if subtler, influence which the biochemical attitude towards the living organism as an understandable system has on medical thought. For as long as the activity of a cell was looked on as being due to the almost mystical properties with which "protoplasm" was endowed, medicine was condemned to the humble rôle of trying to restore the sick to a more or less normal state. The recent development of dietetics has shown us how far removed this "normal" state may be from that which is attainable, even with existing knowledge. The

intimate knowledge which we are now getting of the internal workings of the cell is supplying an explanation of some of the phenomena of pharmacology and embryology, and holds out to medicine new possibilities for the modification and, from some points of view, improvement of the human race. It is reasonable to assume that, if biochemical research on the interrelations between different hormones, on the effects of known substances on the growth and division of cells, and on the chemical differences between different mental states, can continue at its present intensity, it will be possible within a few decades to regulate the onset of old age and to modify greatly the physical and mental development of individuals. These powers will, of course, present mankind with a new set of social or moral problems; the manner in which the conflicting interests of the individual and of the community are adjusted will call for new and interesting legislation. It is a fortunate compensation that the parallel advances in the biochemical interpretation of many sexual phenomena will so simplify the processes of contraception and the control of pregnancy that a number of present-day moral questions are likely to become merely academic.

During the next century the development of biochemistry and of the related sciences such as genetics will have as profound an influence on man's life as the development of physics and chemistry during last century has had on his environment. (*See also* PHYSIOLOGY.)

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**Biography:** *see* AMERICAN LITERATURE; ENGLISH LITERATURE.  
**Biology:** *see* BOTANY; MARINE BIOLOGY; ZOOLOGY.

**Bird Refuges.** Under a national program of migratory waterfowl restoration in the United States, 17 new refuges were established by Executive order during 1937. The total number of Federal bird refuges is (1938) 209, embracing about 4,500,000 acres. Thousands of acres were added to existing refuges by purchase.

The U.S. Biological Survey is charged with the rehabilitation of land and water areas on a scale that, with restricted shooting everywhere, is designed to arrest the decline in numbers and the threatened extermination of certain ducks, geese, swans, and other migratory waterfowl. Water-impoundment structures have been placed on lands suitable for flooding to restore the proper habitat. Wild life technicians have supervised the planting of tons of duck-food and millions of food-bearing trees and shrubs. Nesting islands and game shelters have been constructed. Plants that retard the growth of desirable waterfowl food and cover have been eradicated. Upland tracts have been planted to grain crops for food and cover. The control of predators, highly detrimental to waterfowl, has been instituted on many of the refuges. It is estimated that on the refuges as a whole, bird populations are three to five times greater this year than when the emergency program was initiated in 1934.

Of unique character among the new acquisitions is the Okefinokee Wildlife Refuge in Southern Georgia, containing 292,000 acres. This wilderness area is becoming increasingly attractive to wintering waterfowl. The varied assortment of wild life includes the nearly extinct ivory-billed woodpecker, the limpkin, sandhill crane, black bear, and the Mississippi alligator. (*See also* WILD LIFE CONSERVATION.) (E. A. G.)



**Birmingham,** city and bishopric, Warwick., England; pop. (est.) 1,018,800; rate. value, £7,092,929; rates (1936-37) 14s.6d., (1937-38) 15s.; debt £55,700,000; area 51,147 acres. The second largest town in England and the sixth in the British Empire, Birmingham, "The Metropolis of the Midlands," runs its own gas, electricity, and transport undertakings, its baths, museum, art gallery, and school of art, etc., also its municipal bank; its manufactures are many, and include small-arms, bedsteads, jewellery, machinery, tools, bakelite goods, and practically everything connected with railway-stock, cycles, motor-cycles and cars, and wireless sets, as well as chemicals, chocolate, etc.

During 1937 a new telephone building in Newhall street, costing £600,000 and having the longest switchboard in the world (97ft.) was opened. The city's hospitals were greatly assisted by a munificent gift of £146,000 from Lord Nuffield, who desired it to be devoted to the College of Nursing and Nurses' Home. In August a new recorder, Mr. H. J. Wallington, was appointed. The bells of the cathedral were recast. A severe epidemic of influenza resulted in a total of deaths among the highest in the whole country. The parliamentary representation of Birmingham—which returns 12 members—received a blow from the death of Sir Austen Chamberlain, the vacancy in his division (Birmingham West) being filled in April by the election of Mr. W. F. Higgs (National Conservative), who had a majority of 2,920 over his Labour opponent, Mr. R. H. S. Crossman. During the year the city's industries continued to benefit by the trade-boom, the percentage of unemployment being one of the lowest in the country. Industrial disputes were few and unimportant, though the employees at a motor-works staged a new kind of strike—a "cold-weather strike"—refusing to continue work in unheated buildings.

**Birth Control.** Significant developments in the world-wide birth control movement in 1937 related to its legal and scientific foundations, extension of facilities, and a more rational understanding and acceptance of principles and methods. Increased medical approval and participation were marked.

**United States.**—Birth control under medical direction became legal on Nov. 30, 1936, when the U.S. Circuit Court of Appeals for the Second District rendered a decision in the test case of Dr. Hannah M. Stone, of the Birth Control Clinical Research Bureau, that the Federal obscenity laws do not apply to the legitimate activities of physicians, and that they may prescribe contraceptives in the interests of the health and general well-being of their patients. This decision terminated a long fight against an outmoded Federal law classifying contraceptive information and supplies with obscenity. Although the decision was handed down late in 1936, its impact and impulse to new activity were felt in 1937. This decision brought the movement to the goal it had sought through legislation.

The National Committee on Federal Legislation for Birth Control dissolved, and published a final report.

The American Medical Association approved birth control as an integral part of medical practice and education during 1937. This was one of the most important milestones in the movement. A report by a special committee was adopted by the association's House of Delegates. The association is investigating contraception and will promote the teaching of birth control in medical schools. The importance of its attitude and activities is outstanding.

*The Journal of Contraception*, the only technical publication devoted to the biological and clinical aspects of human fertility and its control, completed its second year under the auspices of the Birth Control Clinical Research Bureau, New York, and its 200 affiliated clinics. The scope of the Clinical Research Bureau was expanded. It has provided clinic service to 61,000 mothers, serves as a clearing house of information, and promotes new cen-

## BIRMINGHAM—BIRTH STATISTICS

tres. It is the first large centre for contraceptive counsel and the largest clinic of its kind. It enlarged its educational department, exhibited scientific films to medical groups, expanded its plans and began a campaign to induce public health authorities to provide birth control facilities. It continues its research on contraceptive products.

A temporary set-back came in one American State with the conviction of clinic officials and staff in the lower courts of certain Massachusetts cities. These cases are being appealed. Legalization stimulated efforts to incorporate birth control into the programs of public and voluntary health, welfare, child-caring and maternity organizations, medical colleges, hospitals, health centres, and clinics. Forty-nine new centres were opened in 19 States.

In some religious groups objections to birth control continue on grounds advanced as fundamental. Some rest, however, on the assumption of moral implications which ignore scientific facts and human realities. But the trend is steadily toward wider acceptance.

**Bermuda.**—Upon the invitation of the Department of Health Margaret Sanger visited Bermuda to help to establish birth control centres.

**Canada.**—The Ontario Court of Appeals dismissed an appeal from a magistrate's decision in a test case turning on whether an admitted violation of a statute was "for the public good," a victory for birth control.

**China.**—At the request of medical leaders, Mrs. Sanger planned to visit China, but hostilities with Japan interfered. The Chinese Medical Association approved contraception as a public health activity.

**England.**—Following representations by a group headed by Lord Horder representing the National Birth Control Association and allied societies, the Minister of Health increased the power of local maternity and child welfare centres to give birth control advice.

**Iceland.**—A law was passed directing the Minister of Health to provide physicians with birth control information when pregnancy threatens the health of mother or child.

**Japan.**—Impressive progress is being made in Japan under the leadership of Baroness Ishimoto.

**Puerto Rico.**—A bill passed by the legislature and signed by Acting Governor Ramos legalized birth control, following efforts instituted five years ago by ex-Governor Beverley. (M. SR.)

**Birth Statistics.** Adequate birth statistics are available for about one-third of the population of the earth. The annual average number of births in the United States was 1,818,262 for 1921-25, and 2,119,170 for the ten-year period 1926-35. It was 2,155,105 in 1935. In western and northern Europe the yearly number of births increased from 3,427,000 in 1841-45 to 4,599,000 in 1901-05. By 1927 it had fallen below the level of 1841-45; in 1933-36 it amounted to 3,172,000. In central and southern Europe it declined from about 5,445,000 in 1922-23 to about 4,895,000 in 1933-36. For the white population of the British empire it decreased from about 1,450,000 in 1921-26 to about 1,295,000 in 1927-32, and to about 1,200,000 in 1933-36.

The simplest method of relating births to population is to compute the yearly birth-rate, *i.e.* the rate of live-born per 1,000 inhabitants. The birth-rate in western and northern Europe dropped from 32 in 1841-85 to 24 in 1911-14 and to 16 in 1932-33. Owing to the recent increase in the number of births in Germany, it rose to 17 in 1934-36.

It declined in central and southern Europe from 32 in 1922-23 to 25 in 1934-36. It decreased, both for the white population of the British empire and for the United States, from 22 in 1921-26 to 17 in 1933-36.



## BISLETI, GAETANO—BLAKE, J. A.

The birth-rate shows the proportion by which a population increases through the birth of children; but it is not an adequate measure of fertility, since it is calculated without regard to the

*Birth Rate Averages, 1915-18, War Years, and 1925-34, per Thousand*

Country (Present Territory)	1915-18	1925-34
United States	24.8	18.9
France	11.0	17.7
Germany	15.7	17.6
England and Wales	19.5	16.2
Australia	26.2	19.6
Austria	15.2	16.7
Belgium	12.9	18.3
Irish Free State	20.7	19.8
Italy	23.0	25.7
Japan	32.5	33.3
Netherlands	26.0	22.6
New Zealand	25.3	18.8
Northern Ireland	21.9	20.7
Norway	24.3	17.1
Scotland	21.9	19.4
Spain	29.2	28.6
Sweden	21.0	15.3
Finland	24.9	20.1
Denmark	24.1	18.9
Hungary	18.3	24.9
Union of South Africa	29.0	25.3
British India	37.3	35.2
Chile	40.0	38.4
Uruguay	27.3	23.5
Switzerland	18.9	17.2

sex and age composition of the population. The best method of eliminating the influence of the sex and age composition is to relate the female births to the females living at the individual years of age. The sum of these specific fertility rates, which is called the gross reproduction rate, shows the average number of girls born to a woman who lives through the child-bearing age.

Until 50 years ago the gross reproduction rate exceeded two in every European country except France and Ireland. By 1895 it had dropped below two in England and Sweden. By 1910 it was below two in every country of western and northern Europe, and also in Australia and New Zealand. By 1925 it still exceeded two in Russia, in the Balkan States, in Poland, and it exceeded one in every country of Europe, as well as in every world area predominantly inhabited by whites. By 1935 Russia, apparently, was the only European country in which it exceeded two, and it was below unity in England, Norway, Sweden, Belgium, France, Switzerland, Austria, and Estonia. (See also POPULATION, MOVEMENTS OF.)

(R. R. K.)

### Bisleti, Gaetano

(1856-1937), Catholic cardinal, born at Veroli, Italy, March 20, 1856. A nobleman by birth, he first became connected with the Church as secret chamberlain to Pope Leo XIII in 1884. He held this post for sixteen years, handling the thousands of pilgrims who visited Rome to celebrate the Pope's golden jubilee during 1887-88. In 1900, he was appointed master of the bed chamber and as such was a close associate of the Pope. Upon the accession of Pope Pius X in 1903, he retained this post and became majordomo as well. He was created cardinal deacon on Nov. 17, 1911 and cardinal priest on Dec. 17, 1928. At the time of his death at Grotta Ferrata near Rome on Aug. 30, 1937, he was grand prior of the Order of Malta, prefect of the Sacred Congregation of Seminaries and Universities (a post he had held since 1915) and grand chancellor of the Pontifical Gregorian University and the Pontifical Institute of Music.

### Black, Hugo La Fayette

(1886- ), justice of the U.S. Supreme Court, was born at Harlan, Clay county, Ala., Feb. 27, 1886. He received his bachelor of law degree from the University of Alabama in 1906 and practised



FORMER SENATOR Hugo La Fayette Black questioned about Ku Klux Klan on his landing in America, after European vacation, to take office as a member of the United States Supreme Court

law until his election to the U.S. Senate in 1926. Re-elected in 1933, he was appointed to his present position by President Roosevelt on Aug. 12, 1937, and was confirmed by the Senate five days later. While the Senator was known for his interest in liberal legislation, his selection caused considerable embarrassment to the Administration when the *Pittsburgh Post Gazette* revealed that he had once been a member of the Ku Klux Klan and claimed that he had rejoined after having once resigned. On Oct. 1, Justice Black explained in a radio address that he had joined the Klan 15 years previously, had resigned and had never rejoined, not considering an "unsolicited" membership card given him in 1926 as membership of any kind. Criticism continued despite this explanation, but suits to prevent him from taking his seat were dismissed by the Court and agitation against the appointment gradually subsided. (See also SUPREME COURT OF THE U.S.)

**Black-Connelly Labor Standards Bill:** see UNITED STATES: *Labour*.

### Blackshirts.

Popular name of the Italian Fascisti, and hence applied to the British Union of Fascists, founded by Sir Oswald Mosley (*q.v.*). On Jan. 1, 1937, the wearing of the Blackshirt uniform became illegal in Great Britain and, with its picturesqueness, the organization lost most of its influence. In March, it created some disorder at Bethnal Green on the declaration of the London County Council election results, the voting for its six candidates having been negligible; in April, several of its leading members seceded and founded a rival body, the "National Socialist League"; in June was held a much advertised, and much interrupted, march from Kentish Town to Trafalgar Square, and in October, Sir Oswald and the district Fascist treasurer were injured by stone-throwing while attempting to conduct an open-air meeting at Walton, Liverpool, and taken to the hospital. (See also BROWN SHIRTS; FASCISM.)

### Blake, Joseph Augustus

(1864-1937), American surgeon, was born in San Francisco, Aug. 31, 1864. He was educated at Yale and the College of Physicians and Surgeons of Columbia University where he was a member of the faculty from 1891 to 1913. He was in Paris at the outbreak of the World War and immediately began surgical work which won him international renown. On returning to the United States in 1919, he practised privately until he became surgeon-in-chief at the Reconstruction Hospital of New York City in 1923. There he specialized in the handling of industrial accidents, but resigned in 1925 to undertake management of the Tarrytown



(N. Y.) Hospital. He died on Aug. 12, 1937 at Litchfield, Conn.

**Blind, Care of:** *see* SOCIAL SERVICE.

**Blum, Leon** (1872- ), French Socialist statesman, was born in Paris of well-to-do Alsatian-Jewish stock; he took degrees in philosophy and law, and for some years practised as a lawyer, while engaging in literary work as dramatic critic and author. Under the influence of Jaurès and the Dreyfus affair, he became an active Socialist, and in 1904 was concerned with Jaurès and Briand in the founding of *L'Humanité*, then a Socialist but later a Communist daily. This launched him into politics, but it was not until after the assassination of Jaurès (July 31, 1914) that he became a deputy; from 1919 to 1928, when he was defeated, he represented the Seine, and since 1929 he has sat for Narbonne, becoming in that year president of the Parliamentary group of the French Socialist party, and writing largely in *Le Populaire*. A great force in politics, he remained in opposition, refusing to accept responsibility without power until, after the triumph of the Front Populaire in May 1936, he became, on June 4, France's first Socialist prime minister.

During his term of office (*see* FRANCE: *History*), M. Blum had to contend with the situation arising out of widespread strikes, he introduced the 40-hour week, reformed the Banque de France, nationalized the war industries, de-valued the franc, actively opposed Fascism in France, and strengthened the defences and the navy. On May 23, 1937, he announced the Government's intention to give women the vote, and on the following day opened the Paris International Exposition; on June 21 he resigned office, after the Senate had refused to give him authority to attempt to overcome the country's financial difficulties by means of ministerial decrees instead of submitting measures to Parliament. In the new Front Populaire Cabinet immediately formed by M. Chautemps (*q.v.*), M. Blum became deputy prime minister, an office he continues to hold.

**Bohemia:** *see* CZECHOSLOVAKIA.

**Bolivia**, a South American inland republic on the Southern Andean plateau; language, Spanish; capital, La Paz; provisional president, Colonel Germán Busch. The area, including the Chaco region, disputed with Paraguay (approx. 100,000 sq.mi.), is estimated to be 514,464 square miles. The population is predominantly Indian, and was estimated at 3,170,784 (1935). The chief cities, with populations, are: La Paz, 142,549; Oruro, 40,000; Cochabamba, 35,574; Potosí, 34,084; Sucre, 33,983; Santa Cruz, 29,802.

**History.**—Internal developments in 1937 were to a large measure the outgrowth of the economic and social conditions resulting from the Chaco War with Paraguay, and were featured by political instability. In March, President David Toro's program of State socialism brought him into conflict with the Standard Oil Co. of New Jersey, whose 2,500,000-ac. oil concessions in South-eastern Bolivia were ordered confiscated. On July 13, the Toro Government was overthrown by a bloodless coup which brought 33-year-old Colonel Germán Busch to power as provisional president. President Busch, adopting a "middle of the road" policy, abandoned Toro's State socialism, immediately abolished the censorship in effect since the outbreak of the Chaco War, invited civilians into his cabinet, and promised early elections. He refused, however, to restore the Standard Oil concession, organizing a Government company to exploit the oil fields and by treaty with Argentina, Nov. 19, obtaining the right to export oil, tax free, through Argentina.

## BLIND, CARE OF—BONDS

Foreign relations in 1937 were chiefly concerned with the unsatisfactory progress of the Chaco negotiations (*see* CHACO). Cordial relations with Chile were furthered by a pact between the two countries to foster mutual trade and cultural relations.

**Trade and Communications.**—External communication is maintained by a railway to the Chilean port of Arica, over which Bolivia enjoys freedom of transportation, by railway to Argentina, and by regular air service. Bolivia has 1,244mi. of railways, and about 1,200mi. of good highways. Airlines link the various sections of the country, especially the eastern portion, which is unconnected by highways and railroads. Exports (about 70% tin) totalled 148,656,100 bolivianos in 1935; imports (chiefly textiles, foodstuffs, and machinery) were 70,893,351 bolivianos, leaving the largest export balance since 1918. As most of the foreign trade comes through neighbouring countries instead of directly, the destination and origin of goods is uncertain.

**Natural Resources.**—The principal resources are mineral. Bolivia is a principal world tin-producer, but labour shortage, due to loss of man-power in the Chaco War, has seriously curtailed production (*see* TIN). Oil-fields of Eastern Bolivia are beginning to be exploited. Except in the tropical north-east, high altitude precludes extensive development of agriculture, but the pastoral industry is of some consequence.

**Finances and Banking.**—The monetary unit is the boliviano (value: approx. 5¢ U.S.). The budget for 1937 contemplated a balance of revenues and expenditures at 200,067,000 bolivianos. The external debt of Bolivia, totalling \$61,648,024 and £147,520, is in default.

**Education.**—Education suffered a serious setback from the Chaco War, but plans have been laid for combating the high illiteracy. There are an estimated 1,600 primary and secondary schools and three universities. A military school and aviation school are maintained. The peace time army strength is 4,600 officers and men. (L. W. BE.)

**Boll Weevil:** *see* ENTOMOLOGY.

**Bonds.** As the world business fabric becomes more closely knit, economic trends in commercial nations, including the trends of security prices, parallel one another more closely, even when ostensible causes seem disassociated. Therefore a joint bond resumé of 1937 for the two great English-speaking democracies is not illogical as it might seem.

The end of 1936 saw the end in all probability of the great up-lift in demand for long and medium term loan-investments which began in 1932 as a herald or concomitant of industrial revival the world over. By November 1936 the demand for American bonds had become so insistent that prices in many instances "topped the all-time peak" of the great bond year 1902, when yield became so small that income considerations seemed hardly the prime motive in money commitment. Yet by April 1937 the prospect had changed and the decline in value, averaging perhaps 5% in the United States, was confined to no country nor type of issue. In the United States, where great Eastern banks carry heavy balances for the rest of the country and under mild duress invest them too heavily in Government issues, the fall in the price of governments has been referred to in print as a "near panic." To those conversant with the history of bond prices, such a decline was adequate warning of what might be expected of corporate shares during ensuing months. The American recession in stocks, which had at least a temporary culmination about October 21, was a not unnatural sequence and not wholly unexpected.

An obvious principal factor this year in the British bond price decline is the rearmament program which contemplates the expenditure of £1,500,000,000 during the next five years, of which



£400,000,000, or an average of £80,000,000 a year, will presumably be raised by long term financing. The effect on British bond prices arises not only from the greater supply of bonds, which in itself is not an alarming increase in relation to the national income, but also from the continuous and cumulative decline in the purchasing power of bond coupons through increased prices of goods and services as the rearmament program spending occurs. This epoch-making military program invites enormous economically non-productive activity; it tends to a dislocation of trade balances, to a decline in the ratio of exports to imports, to a loss of foreign markets in basic industries, and therefore to lower security prices. The end of such a road, however necessary the road, often is war, if for no other reason than to ward off the financial consequences. The program, like the American bureaucratic program, is malignantly cancerous.

Although important bond price decline is a normal anticipant of decline in other phases of financial well-being and in business activity, it does not follow that the attainment of a cyclical bond price zenith is presently to be followed by a major cyclical decline in industrial productivity and volume of commerce. Assuming that the bond price peak of a decade is behind us, there are good reasons for believing that the next deep valley is not immediately ahead.

The autumn of 1929 was the end of a business and of a stock cycle. The year 1937 may not mark the end of the recent recovery cycle in business or stocks. The severity of the 1937 decline in common stock prices in New York, comparable in degree with that of the autumn of 1929, may well represent an undue correction of values to meet business conditions, which the current expressions of attitude by the National Administration lead investors to expect. This decline may also be viewed as in part an adjustment to declining profit margins and working capital resources—a condition which, because it is not primarily economic but legislative, is subject to more prompt correction as the mistakes in these public policies become more evident.

In general, underlying conditions of today are by no means comparable with those of 1929. Economic tides, despite legislative and executive acts, are irresistible and irrevocable. When has there been a major business depression not immediately preceded by scarcity of money and strain on credit? These conditions have long been absent, notably in the United States where now the largest gold storage on record and exceedingly low rates for all classes of interest prevail. Although production now is generally able to supply current needs so that forward orders are not so much in evidence as recently, yet in certain basic industries such as construction, especially in the housing division, post-depression revival has made little headway in supplying the demand for increased facilities to meet population growth.

Subject therefore to the imminence or visitation of war, we may look forward with reason, born of experience, to a comparative stabilization of bond prices in the English-speaking nations at off-peak prices for many months to come, pending further mutations in the long term stock and business cycles that may be generally improving. In an era when national pledges have a tendency to relapse into scraps of paper, the stabilization may well be as effective in England, despite the armament program, as in the United States, which has to face a highly unstable equilibrium of a bank-owned national debt, and where some repudiation of debt by a devaluation of the dollar has already occurred. Looking beyond, a time-lag of years is not unusual between budget unbalance, burdensome debts and devaluation on the one hand and real inflation with its visitation on creditors including bond owners on the other. Probably British financial acumen will offset American natural resources as a retardant of the day of reckoning. (See also STOCK EXCHANGES: *Stocks and Bonds*.) (L. CH.)

**Bonneville Dam:** see DAMS; WATER POWER.

**Bonus:** see ADJUSTED COMPENSATION.

**Book-collecting.** Acquisition by the British museum of the Ashley library, formed by the late Thomas J. Wise, was the most momentous event in the world of book-collecting during 1937. The price was not announced, but was generally believed to be in the vicinity of £100,000. The acquisition was regarded as the most important since the institution was bequeathed the Thomas Grenville collection in 1846. Inevitably the death of Wise in May, at 77, revived discussion of the spurious pamphlets (notably the Reading "Sonnets" of Elizabeth Barrett Browning) which had been exposed two years earlier with such devastating thoroughness by John Carter and Graham Pollard. The Ashley library embraces wide areas of post-Elizabethan English literature—largely, but not wholly, poetry, with particular emphasis on the romantic revival and the Victorian era.

From the Yale University Press, under the editorship of W. S. Lewis and A. Dayle Wallace, issued the first two volumes of the collected edition of the letters of Horace Walpole—his correspondence with the Reverend William Cole. This conspectus of 18th-century life as reflected in the alert and urbane communications of one whose interests covered most of its phases is the concretion of years of specialized collecting activity on the part of Mr. Lewis, and is the direct and inevitable outgrowth of his industry and judgment.

Another evidence of the creative potentialities of collecting appeared in the announcement by the Huntington library, San Marino, Cal., that it will publish a definitive edition of Benjamin Franklin's autobiography from the holograph manuscript in its possession. Completion of the project will signalize the happy ending of the fantastic adventures of a classic. Published first at Paris, in French, in 1791, the autobiography was issued in German and Swedish before its appearance, in a garbled version, in English. John Bigelow, while American minister to France during the American Civil War, instituted a search for the original manuscript, which came to light as a result of his activities following his return to the United States. Bigelow then prepared (1868) what had always been accepted as the definitive edition, but comparison of his published text with the manuscript has disclosed numerous errors in transcription, alterations, and unintentional but annoying emendations. These the Huntington edition will repair.

The year was rich in the fruits of bibliographic research. Notable productions in this department include Geoffrey Keynes's monograph on the books of John Evelyn (Cambridge University Press and the Grolier Club), Thomas Franklin Currier's monumental bibliography of John Greenleaf Whittier (Harvard University Press), and the imposing first volume of the catalogue of the tobacco collection formed by George Arents, Jr., compiled by Jerome E. Brooks (Rosenbach, New York). (J. T. W.)

**Booklist:** see AMERICAN LIBRARY ASSOCIATION.

**Books:** see PUBLISHING.

**Book Sales.** Sales in the United States showed a slight falling off both in the quantity and the quality of material. Nevertheless there was a steady flow of books to the auction rooms, and two sales of outstanding interest were held. The first was the library of George Allison Armour, which fetched \$85,528.00 and included Keats's copy of Shakespeare in seven vols., which sold for \$31,000.00. The second was the Fitz Eugene Dixon collection of sporting and colour-plate books containing the finest collection of Henry Alken's prints and drawings ever made. The series of aquatints of *The Beaufort Hunt* sold for \$12,000.00. Rare books of the 19th and 20th cen-



turies continued to maintain their price last year. The first edition of Miss Braddon's *Lady Audley's Secret* was sold for the extraordinary sum of \$2,200.00.

After several lean years, some old libraries of the utmost importance found their way to the auction rooms, as well as many miscellaneous books consigned both by English and Continental owners. The level of prices was generally good, and in many cases new high records were made.

The first important sale of the year in London was that of Lieut.-Col. W. G. Moss's books in March, which totalled £15,959 11s. 0d. The highest prices were given for original editions of Blake, *Songs of Innocence and of Experience* fetching £1,400 and Young's *Night Thoughts*, with illustrations coloured by Blake himself, £800. In the same month, the first portion of Lord Aldenham's books was sold for £28,846 15s. 0d. The collection was rich in manuscripts; two missals fetched £2,300 and £2,000 respectively. In April, the A. W. Mensing collections from Amsterdam were sold at Sotheby's, the library alone yielding £29,000. Thirty-nine lots of letters from Elizabeth Barrett-Browning were sold in June for £2,706, and 60 lines in Keats's autograph for £950. The same month saw the beginning of the dispersal of the great library of the 7th Duke of Newcastle. Thirty-four lots, mainly manuscripts, sold for £38,055. The highest price, £13,500, was paid for the *Hours* of Isabel of Brittany. Audubon's *Birds of America* sold for the record sum of £2,500. On June 21 an imperfect copy of one volume of the Gutenberg Bible realized £8,000. In July, the interesting library of the Earl of Lonsdale was sold. It contained many early atlases and geographical works. Though no sensational prices were paid the level for this class of book showed a great advance.

In the autumn, two more sales of the Duke of Newcastle's books were held, including a large collection of works from the Aldine press and fine bindings.

On Dec. 6, the *Psalter of Henry IV*, belonging to the Earl of Lonsdale, sold for £5,000. (J. I. D.)

**Bootlegging.** Liquor, as applied to illicit liquor, is no less a problem now than during the Prohibition era in the U.S., or in pre-Prohibition days. During the five years (1915-19) before national Prohibition an average of 4,000 illicit stills per year, 7,000 for six months, July 1919-Jan. 1920, and about 10,000 per year for the 13 years of Prohibition (1921-33) were seized. Illicit still worms and fermenters seized numbered 250,000 in one year. The total appraised value of the property seized varied from \$200,000 to \$2,000,000 per year, 1915-19, and from \$8,000,000 to \$30,000,000, 1921-33. The latest figures (1937) give 16,142 stills seized with over 12,000,000 gals. mash and 4,760,521 gals. spirits seized, together with other property with appraised value of \$3,965,360. Arrests for Federal liquor law violations were 29,477.

The U.S. attorney-general reports (1937) 26,784 individual defendants in cases filed, 20,162 of which were defendants in liquor tax cases, and 21,550 convictions.

The various State liquor control boards or authorities have also a big bootlegging problem in tax evasion and illicit practices under State and local regulations.

**Coal.**—Increased governmental regulation creates a bootlegging problem in other industries. Last year bootleggers mined and sold illegally 2,400,000 tons of anthracite coal, employing 13,000 men, for which consumers paid \$16,000,000. It represented about 5% of total legal output. The underlying social problems of maladjustment and law enforcement are significant. "Hot oil" and even "hot money" are further illustrations of illicit practices that may become as perplexing problems as bootlegging in the liquor industry. (See also LIQUOR LAWS.) (S.McC. L.)

**Borden, Sir Robert Laird** (1854-1937), Canadian statesman, who was Prime Minister during the war years and Conservative leader from 1901 to 1920. He was Canadian representative in the Imperial War Cabinet, at the Paris Peace Conference, at the Washington Conference of 1922, and in the League of Nations. He held honorary degrees and awards from many universities and foreign countries, was president of the Crown Life Insurance Company and Barclay's Bank of Canada, and was author of *Canadian Constitutional Studies* and *Canada in the Commonwealth*. He died, June 10, 1937, at Ottawa. The *Encyclopædia Britannica* gives a full account of his life in vol. 3, p. 896.

**Borneo**, island of the East Indies, north of the Java sea, divided from Celebes by the Straits of Macassar; the southern part, about 207,000 sq.mi. in area, is a Dutch possession; the north and north-east is British, consisting of the State of North Borneo (31,100 sq.mi.), a British protectorate since 1888, ruled by the British North Borneo Company; Brunei (*q.v.*) and Sarawak (*q.v.*), both under British protection.

**State of North Borneo**, has a population (1931) of 270,000, mostly Mohammedans and pagans; there are 340 Europeans and some 50,000 Chinese. The capital and largest town is Sandakan (population 13,900); the second town is Jesselton. Jungle and other tropical agricultural products, such as timber, rubber, tobacco, rice, sago, coco-nuts, etc., are exported. There are about 130 mi. of railway. Revenue and expenditure in 1935 were £327,500 and £209,000, and the value of exports and imports £952,000 and £594,000 respectively. A state bank is established at Sandakan.

The local defence force is an armed native and Indian police numbering about 500, officered by Europeans.

**Dutch Borneo**, under the governor-general of the Netherlands East Indies at Batavia (Java), is divided for administrative purposes into a Western and a Southern and Eastern District. Its population at the 1930 census was 2,194,500. A concession for timber working has been granted to Japan.

**Bose, Sir Jagadis Chandra** (1858-1937), Indian physicist, was known widely for his experiments demonstrating the similar reactions of plants and animals to outside stimuli, for his apparatus for measuring minute plant movements, and for his work with electric waves (*q.v.* *Encyclopædia Britannica*, vol. 8, pp. 302-303). An account of his life may be found in the *Encyclopædia Britannica*, vol. 3, p. 926. Born in Bengal, Nov. 30, 1858, he died at Giridih, Nov. 23, 1937.

**Boston**, seaport at the head of Massachusetts bay; capital of the State of Massachusetts, U.S. Population (1930) 781,188 (229,356 being foreign born whites): 1935 (State census) 817,713. Its metropolitan district (U.S. census), including 80 cities and towns, is fifth in population in the United States, (1930) 2,307,897; (1935) 2,385,465. The officers (1937) were: mayor, Frederick W. Mansfield; city clerk, Wilfred J. Doyle; finance commission chairman, David Lasker; school committee chairman, Frederick R. Sullivan; city attorney, Harry E. Foley; police commissioner, Joseph F. Timilty. City employees numbered 21,025. A new mayor (four year term) and city council (two year) and a school committee member were elected (non-partisan) in November to take office in Jan. 1938. Maurice J. Tobin (Dem.) defeated four other candidates for mayor, receiving 105,212 votes from the 320,487 cast. Ex-Governor James M. Curley (Dem.) ran second with 80,376 votes.

Balancing the budget, reducing the tax rate and relieving traffic congestion were the principal problems. The 1937 tax rate was



\$38.70 per \$1,000 on an assessed valuation of \$1,620,265,000 but revenue did not cover current expenses which were increased by the business recession and by the maintenance of new construction. Net funded debt (August 31): \$130,507,924.95.

W.P.A. projects included the completion of a surgical building at the City hospital, a new municipal golf course, and the beginning of a Huntington avenue subway. The Suffolk county courthouse under construction in 1937 will overshadow the State Capitol, long the dominant feature of the city.

Boston maintained 293 school buildings and 4,730 teachers. Enrollment (1936): elementary 100,626 (declining since 1933); high 32,742; evening 14,093. Expenditures (1936): \$19,658,843. Appropriations (1937) \$17,239,170. College and university registrations increased in 1937 and Boston university and Northeastern university initiated extensive building programs.

Twenty-eight hospitals (six tax-supported) had 123,305 patients in 1936. The overseers of the poor (1937) expended \$11,684,201.61 and managed 19 permanent charity funds totalling \$761,670.93. Cases for week ending December 31 were: dependent aid 15,150; mother's aid 1,601; old age assistance 7,771. The city is trustee for 176 funds for civic betterment totalling \$14,071,970. A federation of 109 institutions in the metropolitan district raised a 1937 Community Fund exceeding \$4,000,000. The Federal unemployment census (preliminary report) showed 43,234 totally unemployed; 20,052 on emergency work; 15,466 partially employed, November 1937. The police force consisted of 2,174 officers and patrolmen. Total arrests: (1936) 81,348; (1937) 95,948.

Total bank resources exceeding \$3,000,000,000 and the Federal Reserve bank (first district) make Boston the financial centre of New England. Total deposits of all banks (1936): \$1,934,418,000. Deposits of the eight largest banks (1937): \$1,074,167,299, a decline of \$65,442,402.

Boston is the chief U.S. wool market and an important fishing port. Wool receipts: (1936) 318,106,000lbs., (1937) 321,251,000lbs. Fish landed: (1936) 339,224,764lbs., (Jan.-Nov. 1937) 298,348,475lbs. The Massachusetts customs district ranked second in the value of imports (Jan.-Nov. 1937). Total commerce of the Port of Boston (1936) 17,214,140 tons (of 2,000lbs.); imports, 2,734,507 tons; exports, 312,416 tons. Passenger traffic to foreign ports (1937): arrivals 57,284 (5.4% increase); departures 16,395 (10% increase).

In 1936 the 2,249 manufacturing establishments had an invested capital of \$231,685,093; used materials worth \$209,264,399; paid \$69,655,055 to an average of 59,409 wage-earners and created a product valued at \$411,706,145. Additions in 1937: 106 new establishments, 113 expansions. Building permits increased (1936-37) from \$11,810,103 to \$18,414,997. (S. J. McK.)

## Botanical Gardens.

The director of the New York botanic gardens, Dr. M. A. Howe, died, and Dr. H. A. Gleason was made deputy in his place. Mr. Henry Teuscher resigned to become superintendent of the Montreal botanic garden. The largest flower in the world, *Amorphophallus titanum*, native of Sumatra, which has twice bloomed at Kew, flowered in the New York botanic garden in June. The bloom was 12ft. in circumference, yellow and green outside, maroon inside, with an overpoweringly offensive odour. (See Illustration in BOTANY.)

Over \$600,000, the Maria Moors Cabot Foundation, was given to Harvard university by Dr. Cabot for work on increasing the production of cellulose by plant and tree breeding and by improving forest soils. The Arnold Arboretum will share in this work.

Research on modern species of *Nicotiana* was carried out at the University of California botanic gardens, which sent an expedition to the Andes from 1935 to 1937 and also to collect plants on the

east coast of South America. At the Blaksley botanic garden, Santa Barbara, Calif., new greenhouses and a laboratory were under construction. The new director is Mr. Maunsell van Rensselaer.

Except for a small nursery, no planting was done on the 386ac. National Arboretum at Washington. The acting director died in January and no successor was appointed.

**Great Britain.**—Changes of staff at the Royal botanic gardens, Kew, London, in 1937, included the appointment of Dr. E. G. S. Brown as temporary assistant in place of Mr. A. R. Horwood, who died in February, and had worked on the identification of European and oriental collections, and in arranging the genera of the Compositae and other families. The curator, Mr. Coutts, retired in August, and Mr. Campbell was appointed. Miss Fitch retired after 45 years' service. Mr. Pearce was made assistant curator, controlling the decorative department. Medals commemorating Their Majesties' coronation were sent to the director, Dr. Sprague and sergeant constable Sealy.

**Canada.**—The *Jardin Botanique de Montréal*, established in 1936, was being laid out. The official inauguration is planned for Montreal's third centenary in 1942. In conjunction with Montreal university, an exploration of the valley of the St. Lawrence was carried out, particularly for alpine-arctic plants, to acclimatize them to the botanic garden.

**Europe.**—In Belgium, transfer of the botanical garden at Antwerp to the Parc des Rossignols began by the removal of the rosery. At Brussels the Government decided to remove the State botanic garden to a site six kilometres away.

At the gardens at Bagnères de Bigorre, France, work on virus diseases of the potato was carried out.

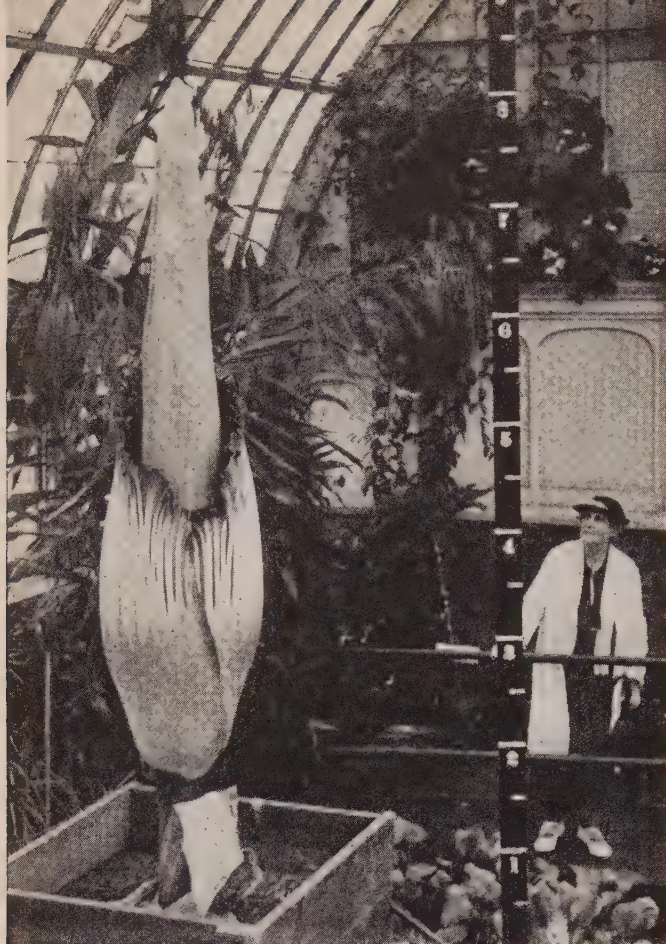
Karel Domin took the place of the late Count Silva-Tarouca, founder and director of the dendrological garden at Pruhonice, Czechoslovakia.

**Asia.**—In memory of Dr. Melchoir Treub, director of the botanic gardens, Buitenzorg, Java, a Treub fund was established to maintain and extend the scope of the institutions comprising the Government botanic gardens in Java, to support research and issue publications. Dr. van Steenis of Buitenzorg made collections in Atjeh, on summits above 3,000 feet. (V. R.)

**Botany.** In the botanical sciences, the year 1937 and those immediately preceding it have been characterized rather by the rapid expansion of activity in some branches than by any spectacular discovery. Systematic and morphological work have gone steadily on, but the bulk of published research has undoubtedly been in the more dynamic parts of the subject, particularly in physiology.

**Plant Physiology.**—A large amount of the published work deals with research in transpiration, assimilation, and respiration along lines already laid down. It is in the investigation of growth phenomena, however, that the most outstanding results have been achieved. For the past two or three years there has been a constant accumulation of data of the most diverse character bearing upon the subject of growth in its various aspects, particularly in connection with growth-promoting substances (auxins), photoperiodism, and correlations between different organs of the plant. The discovery of such growth-promoting substances as phenylacetic acid and  $\beta$ -indolyl acetic acid (the "hetero-auxins") has been followed by that of many other compounds having similar properties to those of the biologically produced auxin itself, e.g. the stimulation of cell multiplication and stretching, and present research is directed towards finding some explanation of the action of these substances upon the plant. Important papers lately published deal with the paradoxical action of auxin itself within the plant. This growth substance is produced at the apex of the stem and in the young leaves surrounding it, and is passed





THE WORLD'S LARGEST FLOWER, called Krubi in its native Sumatra, blossoms to a height of 8½ feet in New York Botanic Gardens

down the shoot, where it inhibits the growth of the lateral buds, yet stimulates that of the internodes and favours cambial activity. It also inhibits growth in the root unless a sufficiency of sugars is present.

**Photoperiodism.**—In problems involving photoperiodism (the effect of long or short periods of daylight upon the flowering of the plant) and particularly those concerned with the change from the vegetative to the reproductive phase of the plant, there is, according to recent American and Russian work, evidence of the activity of growth-promoting substances. For example, by localized illumination of chrysanthemum plants from which the upper leaves have been removed, it has been shown that the onset of flowering is determined by the light-period received by the remaining lower leaves, which seems to indicate that some controlling substance is formed in them which travels up to the growing point and initiates flowering. Other experiments demonstrating the appearance of flower buds on "short-day" species of *Helianthus*, grafted on flowering "day-neutral" species, and others in which underground tuber formation was induced in *Helianthus tuberosus* by short-day illumination of the apex of the plant, tend to confirm the hormone hypothesis, and raise the questions of the formation, transport, and action of these formative substances.

**Plant Nutrition.**—During the past year or two there has been an increasing volume of work on the soil nitrogen supply and micro-organisms and their relations to plant nutrition and "soil-sickness." Among more recent concepts is that of the possibility of beneficial root-excretions, to which the older view ascribed toxic properties and the responsibility for soil-sickness. Lately, a large number of important papers have appeared on the subject. The work of the Finnish physiologists indicates that aspartic acid,  $\beta$ -alanine, and other substances are excreted by leguminous root-nodules, and are reabsorbed by grass crops which are

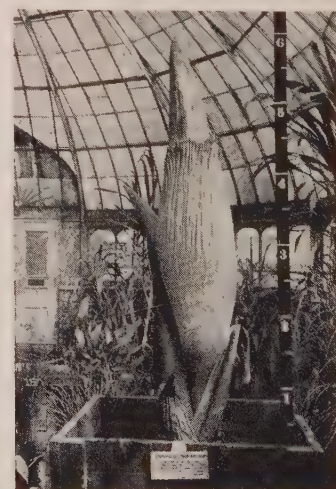
interplanted with them, to the benefit of the latter.

**Ecology.**—Although a good deal of descriptive work continues to be published, recent years have seen a great development of the physiological side of ecology, particularly with regard to xerophytes and halophytes. At the same time, an increasing use of statistical method in the analysis of vegetation is being made. On the economic side research is being carried out upon grassland, particularly from the aspect of sward improvement of hill pastures.

**Fungi.**—Research continues upon the nuclear relations of all groups of fungi, while one of the most interesting developments of recent years, upon which work is still actively going on, is the clearing-up of the life-history of the rust fungi (*Puccinia* spp. et al.). These rusts, which pass part of their life-cycle on a second host, form upon it two visible bodies, the spermogonia and the aecidia, which produce the aecidiospores, which in their turn reinfect the primary host. It is now known that the spores of the primary host which infect the secondary host are of two strains, "+" and "-". Either type of spore will produce mycelium and the flask-shaped spermogonia which later extrude a fluid (nectar) containing large numbers of minute cells, known as spermatia, whose function hitherto has not been understood. The important discovery is that before the aecidial stage can form, there must be fusion between cells of the "+" and "-" strains of the fungus. If one leaf should be infected by spores of both strains, the fertilizing fusion may take place between hyphae within the leaf. It may also, however, be brought about by flies or other crawling insects, which transfer the spermogonial nectar with its spermatia to other infections of the opposite strain, thus enabling fertilization to take place, and aecidia to form. The existence of the different strains means that hybridization of the fungus regularly takes place. We can now therefore follow the whole life-history of some of the rusts, with the exception of certain cytological points which are not yet cleared up, notably the details of the fusion and the rapidity with which the fertilization or "diploidization" spreads along the cells of the hyphae. It is upon these lines that present research is proceeding.

Among other important recent work is that on "biological antagonism" in soil, which results in the disappearance of certain fungi from it—a fact which has important implications in the rotation of crops. In fungi, also, there has been discovered a spore-producing substance, analogous to the auxin type of hormone of the higher plants, which influences the onset of sporing in certain fungi.

**Algae.**—In the green algae, new species have been recorded,



KNOWN TO BOTANISTS as *Amorphophallus titanum*, the Krubi has an offensive odour that attracts carrion insects for pollination. Looking like a giant ear of corn, it puts up new growth every 18 months



and the working-out of life-histories is proceeding. In the brown algae, recent work has shed light on the life-history of a number of so-called "summer annuals" whose life-cycle has been shown to contain either a microscopic gametophytic phase or a minute discoid body, the *plethysmothallus*, which reproduces for several generations by means of plurilocular sporangia, and ultimately gives rise to the ordinary conspicuous phase. Recently, also, the classification of the brown algae has been under review.

**Other Groups.**—In the bryophytes, apart from systematic work, the question of the conduction of water in the mosses is still at issue, while in the pteridophyta perhaps the most interesting work is that on the presence of "vessels" in the wood of certain ferns; the vessel having hitherto been known only in the flowering plants. In palaeobotany, the Kidston collection of fossils is being re-examined, while new species have been recorded from India and the Devonian of Australia. In the gymnosperms and the angiosperms no important changes have occurred. (F. Y. H.)

**Boulder Dam:** see AQUEDUCTS; NEVADA; WATER POWER.

**Bowling.** The far-reaching extent of bowling in the U.S. is not generally known even to Americans. In contrast to the days of Peter Stuyvesant, who is credited with originating the game outdoors on Bowling Green, N.Y., during the Dutch occupation, bowling is now played indoors by about 10,000,000 active bowlers, on approximately 160,000 alleys.

The biggest bowling championship tournament in the U.S. and in the world is sponsored by the American Bowling Congress, held in New York during 1937, attracting 22,000 competitive bowlers from all parts of America. Last year 384 tourneys and 18 State tourneys were supervised by the A.B.C., the controlling organization in the U.S.

Champions of the A.B.C. for 1937 are:

Five-man teams—	Krakow Furniture Co., Detroit, Mich. . . . .	3118
	Waldorf Golden Bock, Cleveland, Ohio . . . . .	3111
Two-man teams—	V. Gibbs and Nelson Burton, Dallas, Texas . . . . .	1359
	Walter Zanger and Val. Metts, Louisville, Ky. . . . .	1329
Individuals	—E. Gagliardi, Mt. Vernon, N.Y. . . . .	749
	E. Soest, Santa Monica, Calif. . . . .	729
	W. Ahnert, Elgin, Ill. . . . .	728
	W. Knox, Philadelphia, Pa. . . . .	725
	P. Crane, Montclair, N.J. . . . .	725
All Events	—Max Stein, Belleville, Ill. . . . .	2070
	Walter Ward, Cleveland, Ohio . . . . .	2039
	Ned Day, Milwaukee, Wis. . . . .	2014
	John Crimmins, Detroit, Mich. . . . .	1982
	Otto Jasper, Cincinnati, Ohio . . . . .	1980

(J. B. P.)

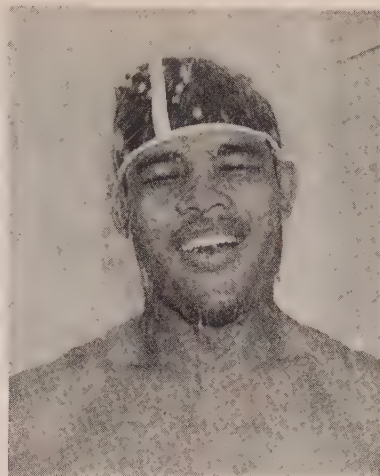
**Bowls.** This game, known in America as lawn bowls, had its American beginning in early New York when the early Dutch settlers played the game on Bowling Green, in 1690 or earlier. In its competitive aspect, the game has been under the control of the American Lawn Bowling Association since 1915 and championships have been held every year since 1918 for the M. F. Robertson trophy. There is also an annual singles championship for the Robert D. Kay trophy and a doubles title event for the Boston Scottish Border Club trophy.

The game is played extensively in Florida, particularly in St. Petersburg, where annual trophies are awarded by the local chamber of commerce and the St. Petersburg press, for singles and doubles winners. Many of the contestants are winter vacationists from all parts of the U.S. and Canada.

**Great Britain.**—The ability of English bowls enthusiasts was fully tested during the 1937 season. The extremes of weather conditions—first of all very wet, with a long dry spell later—made adaptability an essential to consistent success.

Nevertheless, the national championships produced play which, in the all-round sense, reached a high standard. The singles con-

test was won by W. Prentice, of Redcar Zetland B.C., who thus gained his initial success. The pairs event produced a novel result, the victorious couple being A. W. Knowles and his son, A. W. Knowles, Jr., of Worthing B.C.

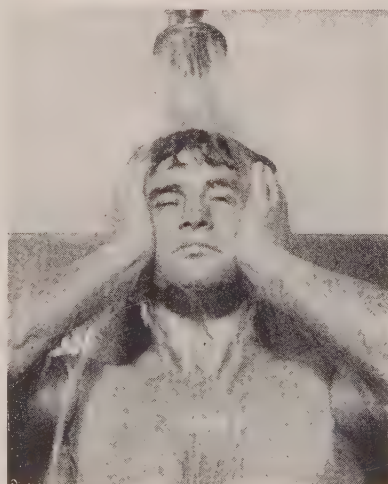


JOE LOUIS, in 1937, won the world's heavyweight championship from Jimmy Braddock

Out of an entry of 2,055 in the rinks contest, the championship went to Sheen Common B.C. For the tenth time Surrey emerged triumphant in the inter-county championship for the Middleton Cup. In the final tie they had a narrow victory over Hampshire, who have now been concerned in the final tie in four of the past five years. The international championship, played in Wales, was won by that country, with England second, Ireland third, and Scotland in the unusual position of "wooden spoonists."

**Boxing.** A new heavyweight world champion appeared in 1937. Certainly, the meteoric climb of the Negro, Joe Louis, the Brown Bomber from Detroit, Mich., reads like an old-fashioned success story. He rose from a lowly labourer's position in an automobile factory to win boxing's richest prize. Set back rudely by a knockout in June 1936 before the flying and potent fists of the German Max Schmeling, the Negro gladiator fought his way back to top-notch recognition and on June 22, 1937 at Comiskey park in Chicago climaxed a most amazing ring career by knocking out James J. Braddock in the eighth round with a right to the jaw. Nor was the new king of the heavyweights content to rest on his newly-won laurels. Setting some sort of a precedent Louis defended the championship a little more than two months later, outpointing Tommy Farr, the rugged Tonypandy Welshman. Few champions in the past have placed their crowns in jeopardy so soon after having annexed them.

Optimistic talk of the "good old days," million-dollar gates and elaborate promotions, followed the Louis-Braddock bout, which attracted a gross gate of \$640,420, although his subsequent meeting with Farr grossed only \$265,000. The poor showing in this



JIMMY BRADDOCK just before he lost world's heavyweight championship to Joe Louis

fight was due mostly to the lack of confidence in Farr's ability. But Tommy surprised everyone with his brilliant showing against the Negro. In fact, there were some who disagreed with the decision.

Mike Jacobs, the directing brains of the 20th Century Sporting Club, forged to the front in 1937 as the world's outstanding promoter, even to the extent of taking over control of boxing in Madison Square Garden. Jacobs leased the famous



arena and with the New York ball parks tied up by him for outdoor extravaganzas, became a sort of "czar."

The boxing game prospered generally among the smaller men also in 1937. Freddie Steele of Tacoma, Wash., middleweight champion of the world, was the most active ruler (aside from Louis) who had five fights during the year. Steele successfully defended his title four times, turning back the challenges of Willie Jones, Babe Risko, Frankie Battaglia, and Ken Overlin. The Carnival of Champions, a "dream" program promoted by Jacobs at the Polo grounds, New York, saw Lou Ambers, lightweight champion, conquer Pedro Montanez, promising Porto Rican; Barney Ross of Chicago, the welterweight king, defeated Ceferino Garcia, speedy Mexican; Harry Jeffra of Baltimore dethroned Sixto Escobar as bantamweight champion; and in a fourth bout, Fred Apostoli, Pacific coast middleweight, scored a technical knockout over the French veteran, Marcel Thil.

The latter was recognized as titleholder by the International Boxing Union.

Henry Armstrong, sensational St. Louis Negro, became the new ruler of the featherweight division by halting Petey Sarron of Birmingham, Ala., although the International Boxing Union regards Al Brown of Panama as the titleholder. Pound-for-pound, Armstrong is looked upon by many as the greatest fighter in the world. Benny Lynch, ring midget from Glasgow, won the flyweight crown by virtue of a victory over Small Montana in London on Jan. 19. Lynch, on Oct. 13, retained the honours while knocking out Peter Kane in a bout in Glasgow. John Henry Lewis continued to rule the light-heavyweights, having to his credit an eight-round knockout triumph at the expense of Bob Olin of New York, a former champion, in St. Louis on June 4.

Amateur boxing was extremely active as well as highly profitable and popular in the United States in 1937. A team of Italians came from Europe to vanquish an American squad in the Yankee stadium in New York on June 9 before a record crowd of 55,000 devotees.

While the unusual activities of the heavyweight champions dominated the year much could be said for the thousands of non-title frays, which added untold interest to the sport throughout the world. Most credit for the rejuvenation of the game, however, has been awarded to Louis. Should the heavyweight king live up to his reputation as a "fighting champion" the sport is certain to continue booming.

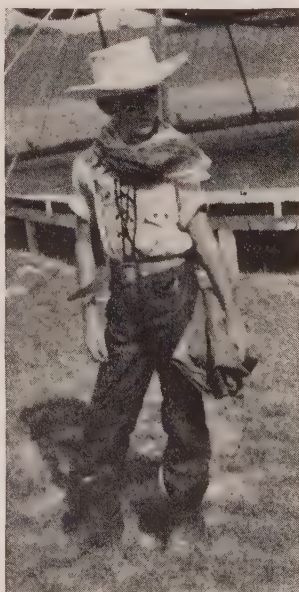
In the field of eligibles are such proven ring warriors as Schmeling, Farr, Max Baer, Nathan Mann, Tony Galento, and Bob Pastor. (J. P. D.)

The most remarkable feature of the progress of the ring abroad in 1937 was the increasing popularity of amateur contests. Germany and the Scandinavian countries take the lead here, and both in quantity and quality their amateurs show a marked advance. In a much less degree the same thing has been happening in France and Italy, though boxing for boxing's sake does not appeal to the practical Latin intelligence. In the year under survey, selected teams of British boxers visited foreign countries, and found themselves opposed by skilful exponents, many of whom reached the standard of the A.B.A. championships. Return visits by these friendly enemies invariably resulted in crowd-compelling contests fought out in a sporting spirit. The meeting in London between picked representatives of Great Britain and Germany was particularly exciting. It illustrated the advisability of having a neutral referee in these international affairs, which are very successful, not only from the boxing, but also from the box-office point of view. (E. B. O.)

**Boy Scouts.** *Boy Scouts of America.*—The year 1937 was outstanding. There was an actual increase in membership of 59,990 bringing the grand total membership up to 1,129,827 (Dec. 31, 1937). In Cubbing, the program for younger boys, there was a gain of 31%. During the year 1,600,000 boys and men participated in the Scout program. About 500,000 boys went to camp. These boys live in every section of the United States.

The high point of 1937 was the National Jamboree held in Washington. At the President's invitation 27,232 boys and men participated, representing 536 Councils located in all parts of the country. Following the National Jamboree the Fifth World Jamboree was held in Holland. Eight hundred and fourteen American boys and men attended.

New publications during the year included a new *Handbook for Scoutmasters* in two volumes, *National and World Jamborees in Pictures*, *Scouting Marches On*, and many pamphlets of a technical nature. The 27th meeting of the National Council was held in connection with the jamboree in Washington. All the activities of the Boy Scouts of America showed a healthy increase. Many more scouts enrolled in the Senior program for older scouts and



Left to right. THREE BRITISH SEA SCOUTS, a Texas Scout in cowboy costume, a Chinese Scout from Nanking, and an Oklahoma Scout in Indian ceremonial dress at first National Boy Scout Jamboree in Washington, D.C.



especially in sea scouting. There was a marked development in scouting in rural areas. (J. E. W.)

**British Empire.**—In British Empire the members of the Association numbered 1,055,551, an increase over the previous year of 43,615. Throughout the world, the number of scouts recognized by the International Bureau was 2,855,689, an increase of 262,857 over the figures for 1936.

The outstanding event of the year was the Fifth World Jamboree, held at Vogelenzang, Holland, in August, when 28,000 scouts from 32 different countries lived together in camp for a fortnight interchanging scout ideas and customs and forming valuable friendships. The jamboree was opened by the Queen of the Netherlands, and the chief scout was present. The British contingent, under Lord Somers, numbered 8,164—the largest group of boys ever transported overseas. During the earlier part of the year, the chief scout attended an All-India Scout Jamboree at Delhi; and in July 55 British scouts visited the National Jamboree of the Boy Scouts of America at Washington.

The Sea Scout branch acquired a romantic headquarters when the Government of the Falkland islands handed over to the Boy Scouts Association the Royal research ship "Discovery." Moored in the Thames near the Temple Steps, the "Discovery" will be kept as an interesting permanent memorial to Captain Scott and other Antarctic heroes. (E. K. W.)

**Brazil,** a republic in eastern South America and largest country in the Western Hemisphere; language, Portuguese; capital, Rio de Janeiro; president, Getulio Vargas.

**Area and Population.**—The area is 3,291,416 sq.mi., approximately a quarter million greater than that of the continental United States excluding Alaska. The population was 30,635,605 (latest census 1920); (official estimate 1936) 42,395,151. The southern part of the country is dominantly white, with a large admixture of Italian blood, estimated as high as 35% for the whole country, and of German. The northern portion, especially around Bahia, is largely negro, with Indian elements in the Amazon basin. The principal cities (with estimated populations) are: Rio de Janeiro, 1,756,080; São Paulo, 1,167,862; Recife (Pernambuco), 491,078; São Salvador (Bahia), 369,692; Porto Alegre, 336,504; Belém (Pará), 298,340; Belo Horizonte, 180,241.

**History.**—Brazil comprises 20 States, one territory, and a Federal district. Until the sweeping changes effected in November

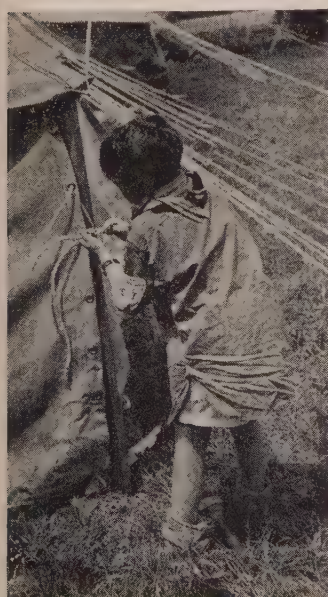
1937, the States had extensive autonomy, although the Federal Government possessed a frequently-exercised right of intervention in State affairs.

At the beginning of the year the country was still under a "state of war" (a modified martial law) following the unsuccessful so-called "communist revolution" of November 1935. Hundreds of participants in that outbreak were still in jail, and were not released until July. It was generally expected that President Vargas would seek to effect the election of a Vargas supporter to succeed when his constitutional term expired in 1938, and considerable opposition was manifested. Early in the year, Flores da Cunha, governor of Vargas's own State of Rio Grande do Sul, and one-time principal lieutenant of the president, loomed as a probable opposition candidate, and a new revolution, under his leadership, was freely predicted. He was unable, however, to command nation-wide support, and joined instead in a coalition of anti-Government and non-Fascist groups who named Dr. Armando de Salles Oliveira as their choice.

In May political lines began to be drawn more clearly. The Integralistas, the Brazilian Fascist party, conducted a "plebiscite" to select a presidential candidate and nominated their party leader, Plinio Salgado. On May 25, Dr. José Américo de Almeida was nominated as the Government party candidate. In June the Government suddenly decreed the termination of the "state of war" and lifted the censorship in effect since 1935. President Vargas then promised opposition groups "full liberty of action." A vigorous political campaign was soon under way, with candidates making extensive use of the radio. Early in August, press rumours of a new declaration of a "state of war" were denied by the Government.

In September, President Vargas signed a bill authorizing a 500,000 conto loan to the National Coffee Department to facilitate continued coffee control. This and a proposal for a Central bank, fathered by finance minister Souza Costa after a visit to the United States, focused attention on the financial weaknesses of the country.

While the presidential campaign continued in full swing, on October 1, President Vargas suddenly proclaimed a 90-day "state of war," because of the "threats of communism." Two days earlier he informed the "Getulio National party," which had been recently founded to further his own re-election, that he would not be a candidate, and on the same day terminated a six-months



FOUR OF 26,000 BOY SCOUTS from twenty-six countries at Scout Jamboree in Washington, D.C. Left to right, the smallest Scout, a Canadian representative, a bugler from Bermuda, and kilned Scout from Scotland



Federal intervention in the State of Matto Grosso. October was full of rumours. Foreign exchange declined as a result of poor coffee prices. In mid-October, under the "state of war" provisions, military control of the anti-Government States of São Paulo and Rio Grande do Sul was removed from the hands of their respective governors. In the latter State, Governor da Cunha attempted at first to defy the order, but found support lacking and acquiesced. Stripped of power and prestige, he resigned on October 16 and left immediately for Uruguay. Three days later Federal intervention was imposed.

On November 3, the Government suddenly took drastic action on the coffee question. The previous cancerous coffee control policy, under which surpluses were burned or otherwise destroyed so as to maintain prices, was suddenly abandoned. Declaring that competitor countries had refused to agree on a quota system and that Brazil refused to be a "Santa Claus" any longer, minister of finance Souza Costa announced a new policy of open competition and a reduction of nearly 75% in the export tax. Immediate Brazilian reaction was generally favourable, but the move spread consternation throughout other coffee-producing countries. A week later, a new and more spectacular action on the part of President Vargas thoroughly eclipsed this departure from a coffee policy of over a generation.

On November 10, President Vargas suddenly, by decree, dissolved both houses of Congress, the State legislatures, and all municipal councils throughout the country and promulgated a new constitution which would place the entire control of the country under the central Government. All state and national courts were abolished, including the Supreme Court, which was replaced by a Federal Supreme Tribunal. The scheduled presidential elections were postponed indefinitely. The presidential term was increased to six years. Meanwhile, President Vargas was to continue in office until elections should be held. The new constitution followed that of 1934 in its general economic policies. A unicameral "Parliament" was substituted for the old bicameral congress. The Vargas coup at the outset was generally interpreted abroad as a definite move toward fascism, although such an intent was vigorously denied by the Government.

In the next few weeks several further steps were taken. After waiting a week to check public reactions, President Vargas issued a decree forbidding any person to hold more than one Government office, a previously common political evil. On November 27, Flag Day exercises were held in which school children publicly burned the old State flags to symbolize the unified nature of the new Brazil. By decree of December 2, existing political parties were abolished, although they were permitted to continue an emasculated existence, under new names, as societies for cultural and mutual aid, or for sporting purposes; distinguishing uniforms or other group insignia were forbidden; and army and navy officers were denied the right to join the new groups. The Integralistas (fascists) a group claiming a million membership, were especially affected by this regulation.

One problem precipitated by the new order and still unsettled at the close of the year was that of national revenue. Reduction of the coffee export tax from 45 to 12 milreis necessitated eventual substitution of some other form of revenue. Inasmuch as part of the tax went to the States, and as the States were forbidden, under the new constitution, to impose interstate export taxes, the financial question threatened to become critical for them. In general Brazilian public opinion seemed to regard the Vargas coup as cutting the Gordian Knot on the increasingly difficult coffee problem and as offering some desirable changes. Nevertheless, an undercurrent of unrest still remained. A most-favoured-nation trade agreement with Canada was made in June, and in October a treaty with Bolivia was signed. Under this last a Brazil-Bolivia



PRESIDENT GETULIO VARGAS, Brazil's dictator

railway was authorized (see below), and an agreement made whereby Brazil would share in any Bolivian surplus of petroleum.

**Trade and Communication.**—In Sept. 1937, an accord with Bolivia was made providing for construction of a railway from the State of Matto Grosso to Sucre and Cochabamba in Bolivia. In December, an international highway bridge across the Uruguay river, at Uruguayana, and connecting Brazil and Ar-

gentina was opened. In 1936, Brazil had only 34,300 kilometres of railways, but the mileage was increased by additional construction completed during 1937. The greater part of the railways are along the coastal plain. Almost half the total mileage is in the two most populous States, São Paulo and Minas Geraes. Railways focus on the many ports, where they complement the coastwise shipping lines. Shipping communications both external and coastwise, were bettered during 1937. In May, Japanese interests began the construction of new ships for eastern South American trade. Late in the year announcement was made in the United States of the transfer of ships from inter-coastal to South American service, effective in Jan. 1938. Internal air communications, too, showed general development; the Rio de Janeiro-São Paulo line proved so popular that service was doubled in June 1937. There are approximately 17,000 mi. of good motor roads.

In 1936, imports totalled \$246,717,567, 10.7% more than in 1935, chiefly from Germany (23.5%), the United States (22.1%), Argentina (16.4%), and Great Britain (11.2%). Foodstuffs, especially wheat; manufactured goods, especially machinery, iron and steel, and automobiles; and raw materials, as coal and gasoline, constituted the main imports. In the first 10 months of 1937, the total imports increased 30%, with the respective shares of the supplying countries remaining substantially the same. Expiration of the trade agreement with Germany during 1937 was expected to reduce imports from that country in 1938, however.

Exports in 1936 totalled \$320,043,320, an increase of 19.3% over 1935, and went largely to the United States (38.8%), Germany (13.2%), and Great Britain (11.9%). Coffee comprised 50.7% and cotton 21.1%. In the first 10 months of 1937 exports increased approximately 10%. With the lifting of practically all restriction on coffee exportation and reduction of the export tax, the effects on the coffee trade were uncertain.

**Agriculture, Manufacture and Mining.**—Brazil is primarily an agricultural country, although there has been a steady increase in industrialization since 1920. The economic mainstay is coffee, which has been subjected to extensive crop control and consequential economic uncertainty, due to world overproduction. Brazil produces three-fourths of the world's coffee and is second only to the Gold Coast in world production of cacao. The State of São Paulo is the coffee centre, and its port of Santos the greatest coffee shipping point of the world.

Cotton, the second most important Brazilian product, has undergone a phenomenal development, especially as an export commodity, since 1932, when it ranked 19th among exports. Over half the crop is consumed within the country, where production and manufacture are estimated to provide employment for 15%



of the working population. Other important crops and the value of their 1936 production are: corn (1,163,890 contos), oranges (381,681 contos), sugar cane (363,681 contos), beans (294,114 contos), and manioc flour (248,540 contos). The livestock industry is important, especially in Minas Geraes, Rio Grande do Sul, and Bahia, and accounts for almost 10% of the exports, in addition to taking care of domestic demands.

In 1935 there were 94,298,600 head of livestock, principally cattle in the country. Mineral production is chiefly of gold, iron, and cement. Manganese, although comprising less than 2% of the mineral production, is important as an export. Manufacturing centres especially in São Paulo, where a third of the manufactured goods of the country are produced. Resources of a forest area in excess of 1,500,000 sq.mi. are as yet only slightly developed, but already supply important commodities.

**Finance.**—The monetary unit is the milreis (value: approximately 5.6¢ U.S.), ordinarily expressed in contos of 1,000 milreis each for large transactions. The budget for 1938, as fixed by Congress before its dissolution, estimated receipts of 3,666,347 contos and expenditures of 3,579,472 contos.

**Education and Religion.**—In 1935 there were 36,661 schools with a total enrolment of 2,862,666. There are several universities and technical schools, notably the Universities of Minas Geraes, Rio Grande do Sul, and São Paulo, and the new University of Brazil, created in June 1937 to supersede the University of Rio de Janeiro. In 1935, in addition to State funds, approximately 7% of the national budget went to education. The country is predominantly Roman Catholic.

**Army and Navy.**—Military service is compulsory. The navy is second only to Argentina among Hispanic American nations. Efforts to obtain obsolete United States destroyers were made in July 1937, a naval building program including two cruisers, nine destroyers, and eight submarines was announced, and contracts for construction in Great Britain of six destroyers at a total estimated cost of \$14,400,000 were made.

**BIBLIOGRAPHY.**—*Brazil: Statistics, Resources, Possibilities* (Rio de Janeiro), 1937. (L. W. BE.)

**Bread and Bakery Products.** The following statistics give some idea of the magnitude of the industry in the United States and Great Britain:

	United States	Great Britain
Persons employed (1935) (bakery products excluding biscuits) . . . . .	186,196	106,093
Value of products . . . . .	\$1,038,718,999	£61,603,000
Cost of materials, fuel and electricity used. . . . .	\$572,726,351	£34,546,000
Persons employed (1935) (biscuits and crackers) . . . . .	28,868	40,850
Value of products . . . . .	\$181,195,092	£15,540,000

The price of bread, which fluctuates with the published prices of flour, is governed in Great Britain in the London area by the Food Council, on a recognized scale of maximum prices, and this sets a standard in many parts of the country although there are considerable variations. In January for instance the price of a 4lb. loaf was 9d., in April it was 9½d., and in September 8½d. and 9d., while the average retail price of bread per lb. in the United States in 1937 was 8.9 cents (8.8 cents in 1929).

(A. E. Wt.)

**Brewing and Beer.** As is exemplified in the table below the production of fermented malt liquor in the United States rose during 1937 by 13%. Germany is the leading importer of beer both in gallon and dollar value; the second and third places in gallon value were occupied by Japan

and Czechoslovakia, and in dollar value by the United Kingdom and the Irish Free State.

#### Production of Fermented Malt Liquor

1935	1936	1937
45,228,605	51,812,062	58,748,087 bbls.
1,394 American standard barrels are equivalent to the British barrel of 36 gallons.		

**Great Britain.**—The main features of the year 1937 in Great Britain were the continual centralization of interest in the British brewing industry and the large scale structural alteration in public-house property. There was also a further advance in the sales of bottled ales as compared with draught, the former now in some areas amounting to nearly 50% of the total beer.

In Great Britain the duty on beer now stands at 10.32 times the pre-war rate, although it is less than it was in 1931. Brewers regard 1929, the last year in which duty was 80/- per standard barrel of 1055 degrees, as it is now, as a normal year.

#### January—October: 10 months

	Standard Barrels	%
1937 . . . . .	14,802,340	90.78
1936 . . . . .	13,854,448	84.96
1935 . . . . .	13,513,048	82.87
1929 . . . . .	16,306,538	100.0

**World Production.**—Additional firms produced canned beer, but since the problem of finding tasteless linings for beer cans has apparently been successfully solved, no notable changes were made in that direction and, with the exception of a new process of refrigeration, no other important improvements in the traditional brewing processes were introduced. Further progress has, however, been made in bottling methods and machinery while the number and variety of published papers relating to original work on brewing, show a keen realization of the value of scientific research to the industry.

#### World Production of Beer for 1936\* (Thousands of American Barrels)

United States . . . . .	56,155
Germany . . . . .	33,984
Great Britain . . . . .	23,329
France . . . . .	12,091
Belgium . . . . .	11,835
Czechoslovakia . . . . .	6,444
Russia (estimated) . . . . .	3,153
Irish Free State . . . . .	2,568
Australia (1935) . . . . .	2,403
Sweden . . . . .	2,169
Canada (1935) . . . . .	2,118

Total beer production (including all other countries) . . . . . 175,568

\*Official figures of the British "Brewers' Society."

(J. R.-MA.)

**Brick.** The revival of the building industry is increasing the demand for all types of building materials to such an extent that brick production in the United States has more

#### Brick Production in the United States (In millions)

Type of Brick	1934	1935	1936
Common . . . . .	1,098.7	1,811.3	2,966.5
Face . . . . .	305.3	472.6	848.8
Hollow . . . . .	6.1	9.1	8.4
Salt-glazed . . . . .	?	?	48.6
Vitrified . . . . .	113.8	87.3	107.1
Sand-lime . . . . .	41.4	61.8	103.2
Fireclay . . . . .	395.9	494.9	626.6
Silica . . . . .	103.5	149.6	229.3
Magnesite and Chromite . . . . .	10.6	12.1	20.4

than doubled since 1934, and preliminary reports indicate a further increase in 1937.

Production in Canada is chiefly common and face brick, with only small amounts of other types, and is mainly from imported clays; total production was 102,670 in 1934 and 116,037 in 1936, as compared with 463,923 in 1929.

(G. A. Ro.)



**Bridge, Contract:** see CONTRACT BRIDGE.

**Bridges.** In 1937 a world's record span length of 4,200ft. was achieved with the completion of the Golden Gate bridge at San Francisco, a suspension bridge with towers 746ft. high and with parallel wire cables of 36½in. diameter. The previous records were:

Year	Bridge	Location	Type	Span
1932 . . . . .	George Washington	New York	Suspension	3,500ft.
1929 . . . . .	Ambassador	Detroit	Suspension	1,850
1917 . . . . .	Quebec	Canada	Cantilever	1,800
1889 . . . . .	Forth	Scotland	Cantilever	1,700
1883 . . . . .	Brooklyn	New York	Suspension	1,595½

It took 40 years (1889 to 1929) to increase the record span length from 1700 to 1850ft.; then, in the next eight years (1929 to 1937), in two leaps, the record span length was more than doubled, from 1850 to 4200 feet.

Plans have been prepared for the proposed Narrows bridge (suspension) to span the entrance to New York harbor with a record-breaking span length of 4,620ft. A generation ago, the feasibility of a span of 3,000ft. was questioned; now bridge engineers confidently agree that suspension bridge spans as long as 10,000ft. are practically feasible.

It is significant to note that the cantilever bridge has yielded its previously claimed supremacy to the suspension type. For spans exceeding 800ft., and even for shorter spans, the suspension type is now generally adopted as preferable. Both aesthetic and economic considerations have governed this change.

The largest bridge project to date was completed in 1936, the Transbay bridge between San Francisco and Oakland, costing \$77,200,000. This has a total length of 8 miles, including (in the west crossing) two suspension bridges of 2,310ft. main span each, sharing a joint centre anchorage in deep water (foundation 222ft. deep), and (in the east crossing) a cantilever bridge of 1,400ft. main span, together with approach truss and girder spans of various lengths. This is a double deck construction for combined highway and railroad crossing. A record foundation depth of 240ft. was reached for the construction of one of the piers; novel dome-topped dredging caissons were used for the sinking of the deep foundations.

In December 1936, the Henry Hudson bridge was completed, carrying Express highway and Parkway traffic over the Harlem river at New York. This has a main span of 800ft., making it the longest plate girder arch span and the longest hingeless arch in the world. Traffic volume over this toll bridge soon proved so great that the addition of an upper deck to double the traffic capacity was immediately authorized and placed under construction (1937-38). Some 6,500,000 cars used the bridge in the first year, each paying a 10-cent toll, and it is expected that the 20-year revenue bonds will be retired and the bridge will be made free in 10 years.

Another outstanding bridge completed in 1936 is the Triborough bridge at New York. The principal features are a suspension bridge of 1,380ft. main span over the East river, and a vertical lift bridge of 310ft. main span over the Harlem river. The bridge is 113ft. wide. The total cost was \$48,000,000, and over 10,000,000 cars, each paying 25 cents toll, crossed the bridge in the first year. The Marine Parkway bridge over Rockaway Inlet at New York was completed in 1937. This has a central vertical lift of 540ft. span, with series of tapering continuous trusses forming the approaches.

The largest suspension bridge in the British Empire is the First Narrows bridge at Vancouver, B.C., under construction 1936-39. It has a main span of 1,550ft. This is a toll bridge project, financed with English capital.

## BRIDGE, CONTRACT—BRIDGES

An important international crossing is the Thousand Islands bridge, joining the United States and Canada across the St. Lawrence river, under construction 1937-38. This crossing, 7 miles long, utilizes the islands to reduce the span lengths required, so that the total cost is only \$2,800,000. The American crossing consists of a suspension bridge of 800ft. main span. The Canadian crossing includes a 750ft. suspension span, a continuous truss of two 300ft. spans, and an arch of 348ft. span.

The opening ceremonies in 1938 feature the celebration of 100 years of international peace and goodwill between the two nations now united by this new link of friendly intercourse.

A notable bridge under construction in 1937, to be completed in time for the 1939 New York World's Fair, is the Whitestone bridge spanning Long Island sound. This is a suspension bridge with a main span of 2,300ft., which will make it the fourth longest span in the world.

All of the recently or currently constructed bridges hereinabove mentioned are toll bridges, generally publicly owned and operated by bridge commissions or authorities. This has become the prevailing method of financing bridge projects, so that the user pays for them instead of adding them to the general tax burden. This has facilitated the securing of many needed bridge crossings to serve the motoring public where such facilities would otherwise have remained unattainable.

Another major work completed in 1937 is the Storstrøms bridge, built by Dorman, Long & Co. for the Danish State Railways, with two-hinged through arches of steel of 460—590—460 feet in the three central spans and with steel girder spans in the remainder of the crossing, whose total length is 10,535ft. The bridge has highway and railway side by side on its deck. In France, the La Roche-Guyon bridge, with a reinforced concrete arch span of 528ft., was built in 1937.

The longest bridges in the world are as follows:

Type	Bridge	Location	Date	Span
Suspension (Cable)	Golden Gate	San Francisco	1937	4,200ft.
" "	George Washington	New York	1932	3,500
" "	Transbay	California	1936	2,310
" "	Whitestone	New York	1939	2,300
" "	Ambassador	Detroit	1929	1,850
" "	Delaware River	Philadelphia	1926	1,750
Suspension (Eyebars)	Florianopolis	Brazil	1926	1,114
" "	Elizabeth	Budapest	1903	951
Transporter Bridge	Sky Ride	Chicago	1933	1,850
Cantilever	Quebec	Canada	1917	1,800
" "	Forth	Scotland	1889	1,700
" "	Transbay	California	1936	1,400
" "	Queensboro	New York	1908	1,182
" "	Carquinez	California	1927	1,100
" "	Montreal Harbour	Quebec	1927	1,097
Steel Arch	Kill Van Kull	New York	1932	1,652
" "	Sydney Harbour	Australia	1931	1,650
" "	Hell Gate	New York	1916	977½
" "	Niagara Falls	New York	1898	840
" "	Henry Hudson	New York	1936	800
Continuous Truss	Duisburg	Germany	1935	830
" "	Sciotoville	Ohio River	1916	775
" "	Goering	Neuwied, Germany	1935	700
" "	Cincinnati	Ohio River	1928	675
" "	Quincy, Ill.	Mississippi River	1930	628
Continuous Girder	Mangfall	Darching, Germany	1935	354
Simple Truss	Metropolis	Ohio River	1916	720
" "	St. Louis	Mississippi River	1912	668
Concrete Arch	Esla	Spain	1935	645
" "	Plougastel	Brest, France	1929	612
" "	Stockholm	Sweden	1935	593
" "	La Roche-Guyon	France	1937	528
" "	Westinghouse	Pittsburgh	1931	460
Vertical Lift	Cape Cod Canal	Massachusetts	1935	544
" "	Marine Parkway	New York	1937	540
" "	Burlington	New Jersey	1930	534
Swing Span	Portland	Oregon	1908	521
" "	Omaha	Nebraska	1893	520
Bascule	Sault Ste. Marie	Michigan	1914	336
" "	Chattanooga	Tennessee	1917	310
Masonry Arch	Plauen	Saxony	1905	295
" "	Salcano	Austria	1906	279



## British Association for Advancement of Science.

The annual meeting for 1937 was held in Nottingham (Sept. 1-8), where the fine new buildings of University college made an ideal setting. Over 2,000 members, including 50 foreign guests and other distinguished Dominion and overseas representatives, attended.

The presidential address, by Prof. Sir E. B. Poulton, F.R.S., on "The History of Evolutionary Thought as recorded in Meetings of the British Association," was a notable contribution to modern writing on evolution. In 13 sections meeting simultaneously, some 300 papers were read, and excursions were made to places of interest. Seven popular lectures were delivered in neighbouring towns by well known members.

Owing to the ever-increasing public demand for systematic presentation of subjects of scientific investigation having a direct bearing on the life of the community, the Council recently instituted a series of papers, in which the more immediate public interest would be stressed, and this series has now become well established.

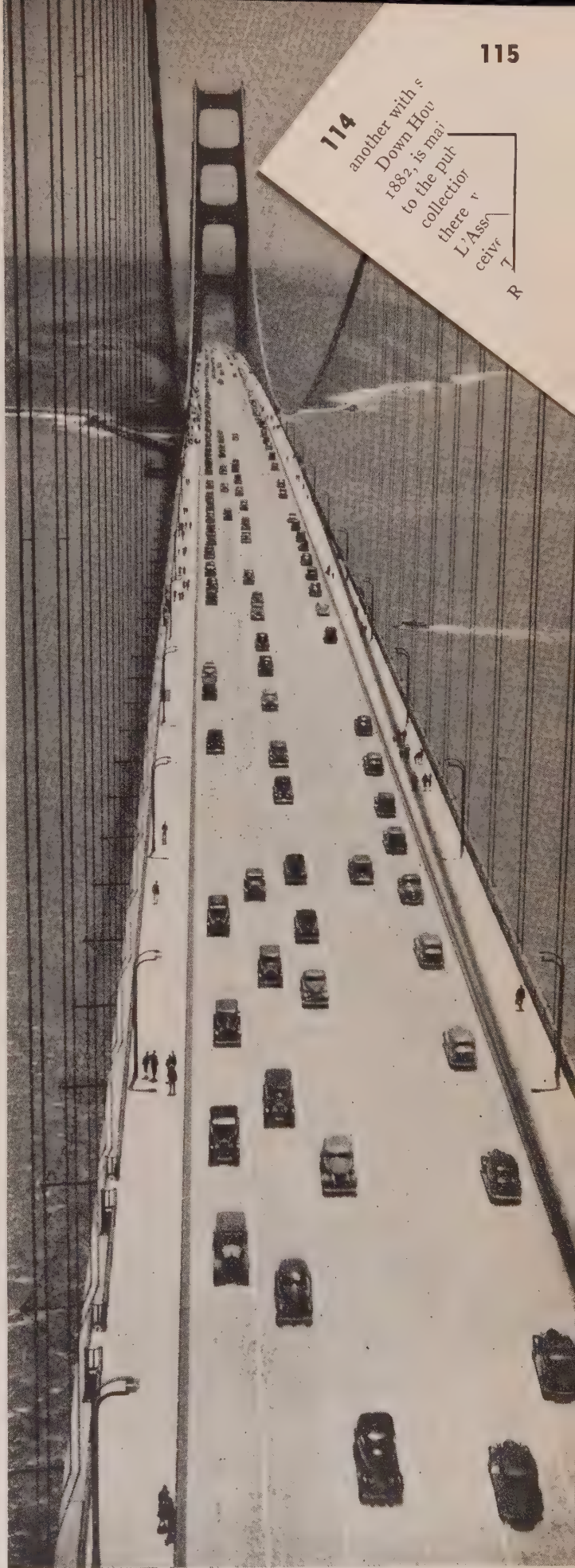
At Nottingham, subjects discussed under this head were: X-ray methods and industry, the sex ratio, labour transference, physiology and the health of the individual and the community, adult education, and planning the land of Britain. Individual papers were read on noise and the nation, industrial physics, colour blindness, the informative content of education (by H. G. Wells, president of the education section), design of motor vehicles and traffic safety, State intervention in agriculture.

From time to time the association has held its annual meeting, by invitation, overseas. Its imperial scope was still further extended when, early in December, 100 members left Britain to attend the Silver Jubilee Meeting of the Indian Science Congress Association at Calcutta, and to tour India. Sir James Jeans succeeded the late Lord Rutherford as leader of the delegation and president of the Congress.

In Nov. 1936, the British Science Guild was incorporated into the British Association, which now maintains foundation lectures inaugurated by the guild. The Alexander Pedler lecture was delivered on May 3, at Leicester, by Prof. Allan Ferguson, on surface tension illustrated by motion pictures; and the Norman Lockyer lecture on Nov. 24, in London, by Dr. R. E. M. Wheeler on "Origins of Town Life in Britain." Further, in 1937 Mr. G. Radford Mather, an engineer and life member of the British Association, founded a series of lectures bearing his name to deal with science and the community. The first of these lectures was given in London in October by the late Rt. Hon. J. Ramsay MacDonald, and was his last public address.

The association has long maintained research committees dealing with a wide range of topics; 47 such committees were appointed in 1937, and grants approved by Council to aid the work of some of them amounted to £985. Of reports submitted for 1936-37, one dealt with the position of geology in schools, and made suggestions for increasing the supply of qualified geologists;

THE WORLD'S GREATEST BRIDGE, across Golden Gate strait from San Francisco to Marin county, California, was opened for traffic in June 1937, after three years in building at a cost of eleven lives and \$35,000,000. The structure, a single-deck, suspension bridge, has a main span 4,200 feet long, hung from two cables 36½ in. in diameter and suspended from steel towers 746 feet high. The total length of the bridge is 9,266 feet and it is 220 feet above the water. More remarkable than its colossal proportions, however, are the engineering methods of providing compensation against the irresistible and inevitable forces of wind and weather. In a heavy gale the bridge is so constructed it may swing as much as twenty-one feet out of line, the two huge cables may expand and lengthen and then contract as much as 16 feet under the influence of a hot sun and subsequent cooler temperatures, all without damage to the bridge or interruption of traffic. The towers may sway several feet out of the perpendicular without damage. How well the bridge may withstand earthquakes is a subject of much scientific discussion. Joseph Baermann Strauss, engineer, designed and built the bridge, which was constructed without Federal Government aid.



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**Bridge, Cor** suggestions for the improvement of adult education. se, in Kent, the home of Charles Darwin from 1842 to .ntained by the association as a national memorial open lic. Recent additions have been made to the important bridge a of Darwiniana, and for the year ending June 6, 1937, were 6,148 visitors. On July 29, 40 representatives of high ar ociation française, led by M. Maurain, president, were reous re d there by the Council.

the president for the Cambridge meeting (Aug. 17-24, 1938) is t. Hon. Lord Rayleigh, F.R.S. (O. J. R. H.)

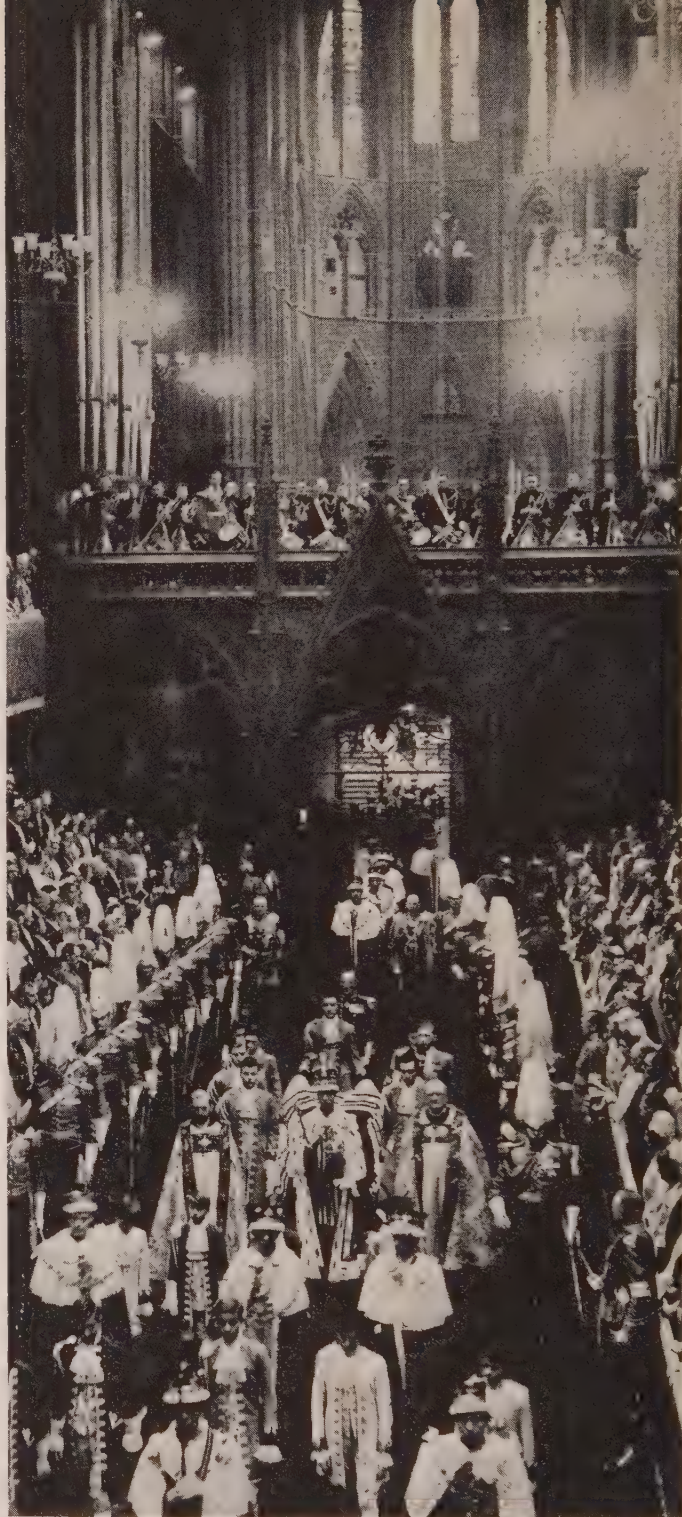
**British Columbia** covers an area of 366,255sq.mi., being equivalent in area to the United Kingdom, France, Holland, Belgium, and Denmark combined. The population of the Province (1937) is approximately 750,000. Of this population about 48,750 are orientals, 25,500 being Japanese and 23,250 being Chinese. The Japanese population of British Columbia is about 90% of the total Japanese in Canada, and is increasing with some rapidity. The Chinese are about 60% of the total in Canada, and owing to the small number of females, are increasing very slowly. About 50% of the population is concentrated in the south-western part of the Province, mainly in the cities of Vancouver, Victoria, and New Westminster.

British Columbia has been described as a "sea of mountains." There are great variations in climate. The coastal area enjoys what is known as a Mediterranean climate with mild winters and a summer temperature rarely above 80 degrees. The rainfall is heavy in winter, particularly on the West Coast of Vancouver island and on the northern coast of the Mainland. From a climatic point of view the Province is divided into belts running in a south-easterly and north-westerly direction. Rainfall varies from as low as 6.90 inches at Ashcroft to 263.87 inches on Vancouver island.

In the matter of social legislation the Province takes a lead in Canada, and in addition to protective legislation dealing with workers in industries of various kinds there has been established a Board of Industrial Relations which fixes wages and hours.

The main industries of the Province are forestry, mining, fisheries, and agriculture. Although the Province is still mainly a primary-producing area, certain manufactures have grown up arising out of the primary industries, and also a considerable amount of domestic manufacture. The value of the products of the four main industries in 1936 was: forestry, \$72,000,000; mining, \$54,000,000; agriculture, \$46,000,000; fisheries, \$16,000,000. Manufacturing industries in 1935 amounted to \$92,260,804. The Okanagan Valley in the interior of the Province is famous for its apples and other fruits, and the Fraser Valley is noted for dairy and mixed farming.

The representative of the Crown in the Province is the Hon. Eric W. Hamber, who is advised by a cabinet, which is responsible to the legislature, representing the electors of the Province. This cabinet is headed by the Premier, Hon. T. D. Pattullo, and consists of Hon. John Hart, minister of finance; Hon. Wells Gray, minister of lands; Hon. G. M. Wismer, attorney-general; Hon. F. M. MacPherson, minister of public works; Hon. G. S. Pearson, minister of mines and labour; Hon. K. C. MacDonald, minister of agriculture; and Hon. G. M. Weir, minister of education and provincial secretary. Annual sessions of the legislature are held. At the recent session of the legislature important measures were passed making provision for collective bargaining as between workers and employers, and arbitration in the case of industrial disputes. A measure was also introduced making provision for the setting up of a board to control prices of coal and petroleum products in the Province, and for the setting up of a department of trade and industry in the Province, and the creation of a bureau of eco-



CORONATION PROCESSION of King George VI leaving Westminster Abbey after the ceremony

nomics and statistics which shall be responsible for advising the Government on matters of economic importance to the Province. By agreement with the Federal Government, the Province assumed administrative jurisdiction over Yukon Territory.

In Provincial politics there are three parties, namely, Conservative, Liberal, and Canadian Commonwealth Federation (Socialist). These three parties have their counterpart in Dominion politics, although there is a distinction between the matters which fall within the functions of the two Governments. The present Government is Liberal. (W. A. C.)

**British East Africa:** see KENYA; TANGANYIKA; etc.



**British Empire.** The Governments of the British Empire and the Governors and Premiers are as follows:

Country	Area Sq. miles (approx.)	Popula- tion ooo omitted	Capital	Status	Governors and Premiers
<i>Europe</i>					
Great Britain and Northern Ire- land . . . . .	94,278	44.937	London . . . . .	Kingdom . . . . .	George VI, King-Emperor. Prime Minister of Great Britain: Neville Chamberlain. Governor of Northern Ireland: The Duke of Abercorn. Prime Minister of Northern Ireland: Viscount Craigavon.
Channel Islands . . . . .	75	93	{ St. Helier . . . . . St. Peter Port . . . . .	Kingdom of Great Britain and N. Ireland . . . . .	<i>Jersey:</i> Maj.-Gen. Sir H. de C. Martelli. <i>Guernsey:</i> Maj.-Gen. Sir E. N. Broadbent. Gen. Sir C. Harington. President: Eamon de Valera.
Gibraltar . . . . .	1,200ac.	21	Gibraltar . . . . .	Colony . . . . .	Gen. Sir C. Harington.
Irish Free State (Eire) . . . . .	26,600	3,000	Dublin . . . . .	Dominion . . . . .	President: Eamon de Valera.
Isle of Man . . . . .	230	49	Douglas . . . . .	Kingdom of Great Britain and N. Ireland . . . . .	Vice-Adm. W. S. Leveson-Gower. Gen. Sir C. Bonham Carter.
Malta and Gozo . . . . .	120	262	Valletta . . . . .	Colony . . . . .	
<i>Asia</i>					
Aden, Perim, etc. . . . .	102	47	Aden . . . . .	Colony . . . . .	} Lt.-Col. Sir B. R. Reilly. Ruler: H. H. Shaikh Sir Hamad bin 'Isa Al Khelifah.
Aden Protectorate . . . . .	42,000	600		Protectorate . . . . .	
Bahrein Islands . . . . .	213	150	Manamah. . . . .	Protectorate . . . . .	
Borneo:					
State of North Borneo . . . . .	31,000	270	Sandakan . . . . .	Protectorate . . . . .	C. R. Smith, Gov.
Brunei . . . . .	2,500	34	Brunei . . . . .	Protectorate . . . . .	T. F. Carey (Brit. Res.)
Sarawak . . . . .	50,000	450	Kuching . . . . .	Protectorate . . . . .	Rajah: H. H. Sir Charles Vyner Brooke.
Ceylon (Maldiv Islands) . . . . .	25,500	5,313	Colombo . . . . .	Colony . . . . .	Sir A. Caldecott.
Indian Empire . . . . .	1,575,000	338,171	Delhi . . . . .	In transition . . . . .	Emperor of India: H.I.M. George VI. Secretary of State: Marquess of Zetland. Viceroy and Governor-General: Marquess of Linlithgow.
Burma . . . . .	234,000	14,667	Rangoon . . . . .	Overseas Territory . . . . .	Sir A. D. Cochrane.
The Straits Settlement . . . . .	1,535	1,114	Singapore . . . . .	Colony . . . . .	Sir T. S. W. Thomas, Gov.
Federated Malay States. . . . .	27,548	1,961		Protectorate . . . . .	The Rulers of Perak, Selangor, Negri Sembilan, and Pahang.
Other Malay States . . . . .	25,000	1,601		Protectorate . . . . .	The Rulers of Johore, Kedah, Perlis, Kelantan, and Trengganu.
Cyprus . . . . .	3,600	348	Nicosia . . . . .	Colony . . . . .	Sir H. R. Palmer, Gov.
Hongkong . . . . .	32	1,010	Victoria . . . . .	Crown colony . . . . .	Sir G. A. S. Northcote, Gov.
Palestine . . . . .	10,000	1,400	Jerusalem . . . . .	Mandate . . . . .	Lt.-Gen. Sir A. G. Wauchope.
Trans-Jordan . . . . .	34,000	300	Amman . . . . .	Mandate . . . . .	Amir H. H. Abdullah ibn Hussein.
<i>Africa</i>					
Kenya Colony and Protectorate . . . . .	225,000	3,084	Nairobi . . . . .	Colony and protectorate . . . . .	Air Chief-Marshal Sir R. Brooke-Popham.
Uganda Protectorate . . . . .	94,000	3,573	Entebbe . . . . .	Colony and protectorate . . . . .	Sir P. Euen Mitchell.
Zanzibar . . . . .	640	138	Zanzibar . . . . .	Colony and protectorate . . . . .	J. H. Hall (Brit. Res.).
Mauritius . . . . .	720	411	Port Louis . . . . .	Colony . . . . .	Sir Bede Clifford.
Nyasaland . . . . .	37,000	1,623	Zomba . . . . .	Colony and protectorate . . . . .	Sir H. Kittermaster.
St. Helena and Ascension . . . . .	85	4	Jamestown . . . . .	Colony . . . . .	Henry Guy Pilling.
Seychelles . . . . .	150	30	Victoria . . . . .	Colony . . . . .	A. F. Grimble.
Somaliland Protectorate . . . . .	68,000	345	Berbera . . . . .	Protectorate . . . . .	Maj. Sir A. S. Lawrence.
Basutoland Protectorate . . . . .	11,720	662	Maseru . . . . .	Colony . . . . .	Sir W. H. Clark.
Bechuanaland Protectorate . . . . .	275,000	262	Mafeking, in Cape Province . . . . .	Protectorate . . . . .	Sir W. H. Clark.
Southern Rhodesia . . . . .	150,344	1,109	Salisbury . . . . .	Self-governing colony . . . . .	Sir H. J. Stanley.
Northern Rhodesia . . . . .	288,400	1,386	Lusaka . . . . .	Colony . . . . .	Maj. Sir H. W. Young.
Swaziland . . . . .	6,704	156	Mbabane . . . . .	Protectorate . . . . .	Sir W. H. Clark.
Union of South Africa . . . . .	472,550	9,589	{ Seat of Government, Pretoria Seat of legislature, Capetown	Dominion . . . . .	Sir P. Duncan. Premier: Gen. J. B. M. Hertzog.
South-West Africa . . . . .	317,725	360	Windhoek . . . . .	Mandated territory . . . . .	
<i>South-West Africa</i>					
Nigeria, including British Cam- eroons . . . . .	372,674	19,928	Lagos . . . . .	Colony and protectorate . . . . .	Sir B. H. Bourdillon.
Gambia . . . . .	4,000	198	Bathurst . . . . .	Mandated territory . . . . .	
Gold Coast Colony . . . . .	23,937	1,781	Accra . . . . .	Colony and protectorate . . . . .	Sir T. Southorn.
Ashanti . . . . .	24,379	668	Kumashi . . . . .	Colony . . . . .	Sir A. Hodson.
Northern Territories . . . . .	30,486	815	Tamale . . . . .	Protectorate . . . . .	} Administered under Governor by Chief Commissioners.
Togoland . . . . .	13,941	294		Protectorate . . . . .	
Sierra Leone and Protectorate . . . . .	32,000	1,672	Freetown . . . . .	Mandated territory . . . . .	D. J. Jardine.
Anglo-Egyptian Sudan . . . . .	1,014,000	5,707	Khartoum . . . . .	Colony and protectorate . . . . .	Lt.-Col. Sir G. S. Symes.
Tanganyika Territory . . . . .	366,000	5,135	Dar-es-Salaam . . . . .	Condominium . . . . .	Sir H. MacMichael.
<i>America</i>					
Bahamas . . . . .	4,404	60	Nassau . . . . .	Colony . . . . .	C. C. F. Dundas.
Barbados . . . . .	166	188	Bridgetown . . . . .	Colony . . . . .	Sir M. A. Young.
Bermudas . . . . .	19	31	Hamilton . . . . .	Colony . . . . .	Lt.-Gen. Sir R. J. T. Hildyard.
British Guiana . . . . .	90,500	333	Georgetown . . . . .	Colony . . . . .	Sir W. E. F. Jackson.
British Honduras . . . . .	8,600	56	Belize . . . . .	Colony . . . . .	Sir A. C. M. Burns.
Canada . . . . .	3,700,000	10,400	Ottawa . . . . .	Dominion . . . . .	Lord Tweedsmuir. Premier: W. L. Mackenzie King.



Country	Area Sq. miles (approx.)	Popula- tion ooo omitted	Capital	Status	Governors and Premiers
<i>America (Continued)</i>					
Falkland Islands and South Georgia . . . . .	4,600	3	Stanley . . . . .	Colony . . . . .	Sir H. Henniker-Heaton. Sir E. B. Denham. Sir G. J. Lethem.
Jamaica . . . . .	4,540	1,139	Kingston . . . . .	Colony . . . . .	
Leeward Islands . . . . .	680	140	St. John (on Antigua) .	Colony . . . . .	
(Antigua, St. Christopher, Dominica, Montserrat, and the Virgin Islands)					
Newfoundland and Labrador .	157,740	294	St. John's . . . . .	Colony Constitution suspended . . . . .	Vice-Adm. Sir H. T. Walwyn. Sir Arthur A. N. Fletcher. H. B. Popham.
Trinidad and Tobago . . . .	1,980	448	Port of Spain . . . . .	Colony . . . . .	
Windward Islands . . . . .	616	206	St. George's (Grenada) .	Colony . . . . .	
(Grenada, St. Vincent, and St. Lucia)					
<i>Oceania</i>					
Commonwealth of Australia . .	3,000,000	6,820	Canberra . . . . .	Dominion . . . . .	Brig.-Gen. Lord Gowrie. Premier: Joseph Lyons. Governor: Sir A. F. Richards. The Viscount Galway. Premier: M. J. Savage.
Fiji . . . . .	7,000	198	Suva . . . . .	Colony . . . . .	
New Zealand . . . . .	104,000	1,587	Wellington . . . . .	Dominion . . . . .	
Papua . . . . .	91,000	276	Port Moresby . . . . .	Part of Commonwealth of Australia . . . . .	
Pacific Islands . . . . .	11,456	265	. . . . .	Colonial protectorates and condominiums . . . . .	Sir H. Murray. Sir A. F. Richards. Brig.-Gen. W. Ramsay McNicoll. M. J. Savage. Commander R. C. Garsia.
New Guinea, Territory of . . .	89,952	507	Rabaul . . . . .	Mandated territory . . . . .	
Western Samoa . . . . .	1,130	55	Apia . . . . .	Mandated territory . . . . .	
Nauru . . . . .	5,396 acres	3	. . . . .	Mandated territory . . . . .	



THE MEMBERS OF THE IMPERIAL CONFERENCE at London. Prime Minister Neville Chamberlain is in the centre, first row



**British Guiana,** a British colony in north-eastern South America; language, English; capital, Georgetown; governor, Sir Wilfred E. F. Jackson. The area is 90,500 sq.mi.; population, 310,933 (census, 1931); (official estimate, 1936) 332,898, of which 42% were East Indians. The chief cities are: Georgetown, 66,601; New Amsterdam, 9,514. The principal developments in 1937 were the appointment, in January, of Sir Wilfred E. F. Jackson as governor, succeeding Sir G. S. S. Northcote, and the efforts to develop the colony, through establishment of a trust fund to provide capital and through stimulation of the Canadian trade. There are 79 miles of railway, 322mi. of main highways, and several navigable rivers. In 1936 imports, comprising foodstuffs, manufactured goods, and lumber, totalled \$9,448,189, largely from Great Britain (55%), Canada (14%), and other parts of the British Empire (11.5%), with 8.5% from the United States; exports, largely sugar and sugar products, bauxite, gold, with some diamonds, aggregating \$11,966,127 were to Great Britain (41.3%), Canada (38%), other parts of the Empire (7.5%), and the United States (6%). The export commodities and rice are the principal products. Sugar production provides employment, directly or indirectly, for 50% of the wage earners. Production for 1937 was adversely affected by poor weather conditions. The monetary unit is the dollar, approximately equal to the United States dollar. There were 236 primary schools (1936 enrolment, 51,077) and eight secondary schools. (L. W. BE.)

**British Honduras,** British colony in Northern Central America; language, English; capital, Belize (pop. 16,687 in 1931). Governor, Sir Alan C. Maxwell Burns. The area is 8,598sq.mi. Population (1931 census) 51,347; official estimate, 56,071 (1936). The colony has direct steamship and air connections with the outside, 25mi. of railroad and 170 miles of motor highway. Important as an intermediary in trade between parts of Yucatan and the United States, with re-exports of \$1,070,248 (1936). Total imports, 1936, aggregated \$3,272,833, from the United States, the United Kingdom, and Mexico; exports totalled \$3,485,099, almost half to the United States. Imports comprise foodstuffs, manufactured articles, and logwood and chicle for re-export. Exports are logwood, chicle, and bananas. The monetary unit is the British Honduras dollar (value, approx. \$1.00 U.S.). Total colonial revenue (1936) was \$1,597,540.35, with expenditures of \$1,388,695.82. Public debt aggregated \$1,159,489.50 (1936). Eighty-six primary schools (enrolment of 6,832 in 1936) are financed chiefly by government grants; four private secondary schools (enrolment 336) receive slight government aid. The population is over 50% Roman Catholic.

**British Legion.** An organization founded by the first Earl Haig in 1921 to foster the interests of British ex-service men; it now numbers about 123,000 members, organized in 4,301 branches, with a women's section comprising 1,689 branches; the membership increased during 1937 by 16,942. In the course of the year, grants amounting to £430,860 were made to distressed comrades, and work was found for 42,700 unemployed ex-service men. The Legion's annual Poppy Day appeal (Nov. 11), which brings it more prominently into public notice than any other of its activities and is its chief source of income, resulted in 1937 in the collection of £546,254, the average since and including 1929 being £495,085. The factory at which the poppies are produced gives employment to about 350 disabled men, for whom also a housing scheme has provided some 150 houses.

A village for tuberculous ex-service men is maintained at Preston Hall, near Aylesford, Kent, where wood graining, the manufacture of fancy goods and soap, and other activities are carried on by its population of about 650; the pensions department administers



POPPIES of various sizes being arranged for despatch from the Richmond factory for sale on Armistice Day, November 11

the Prince of Wales' British Legion Pension Fund, which provides pensions for nearly 2,000 prematurely aged ex-service men and women until they become eligible for the State old age pension.

The Officers' Association and Benevolent Department has since 1920 expended £2,539,154 in cash relief, placed 8,252 persons in employment, and assisted 4,686 children with the cost of their education, expending on this last-named branch of its work £14,923 in 1937. (See also AMERICAN LEGION.)

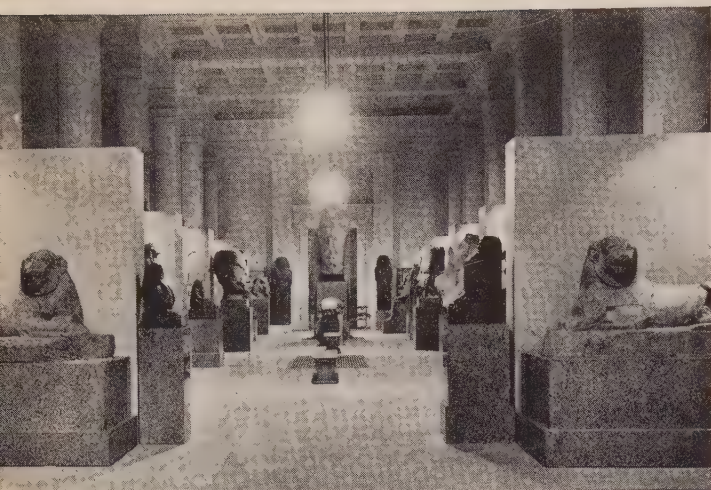
**British Medical Association.** The 105th annual meeting was held in Belfast in July 1937, under the presidency of Prof. R. J. Johnstone, whose address dealt with "Some thoughts on medical education." During the year the Council considered many matters relating to medical practice and the interests of individual members. In connection with the latter, steps were taken to urge committees of management of voluntary hospitals "to recognize the claim of visiting medical staffs to some share in the moneys raised for the treatment of patients other than those provided by voluntary subscription or donation." A parliamentary agent was engaged to examine all bills and report on any proposals likely to affect the interests of the medical profession. A Scottish branch of the British Medical Bureau was opened in Edinburgh. The 5th Australian Medical Conference was held at Adelaide in August, and the 10th annual meeting of the South African branch at Bloemfontein in September. (See also AMERICAN MEDICAL ASSOCIATION.)

**British Museum.** Considerable structural alterations took place in 1937. The first quadrant of the old "Iron library" to be rebuilt was completed, and a unique system of book delivery installed, with a continuous running system of elevators facilitating delivery to the appropriate floor and a system of horizontal moving bands delivering to the elevator. Air-conditioning was installed for the books, and special lights in the book-stacks were arranged to shade the workers and throw light on the books only. A system of pneumatic tubes was installed all over the library to deliver tickets for books to the appropriate floors.

The North library, closed for three years, reopened with the reading room made both lower and lighter, new desks and chairs were provided, and shadowless artificial lighting was installed.

Lord Duveen, who has undertaken part of the cost of rebuilding the old "Iron library," is also presenting a new Parthenon room to house the Elgin marbles.





THE NEWLY ARRANGED Egyptian Room in the British Museum

On the upper floor, mezzanine floors were built under the Egyptian rooms. An experiment was made with the display of Greek vases. The middle of the room, open to the public, shows a selection of fine specimens, while study series are arranged behind partitions.

The most important accession to the library was the Wise or Ashley library, consisting of 7,000 volumes of first editions of the famous English poets and dramatists, from Elizabethan times up to the present. Volumes of particular interest include: *Welth and Helth*, 1557, of which only one other copy is known; *Gammer Gurton's Needle*, 1575, the earliest English comedy of which any perfect copy exists, and a fine copy of Milton's *Comus*, 1637.

Other library accessions included an English MS. psalter of about 1360, which proves the English origin of the Egerton Genesis; an autographed MS. of Anatole France, the only autograph outside the Bibliothèque Nationale; nearly 100 original editions of works by Beethoven, Mozart, and Haydn; the Shrewsbury-Talbot archives, 2,195 documents relating to the estates of the Talbots, earls of Shrewsbury; four figure drawings by Rodin, and two by Augustus John.

Museum accessions included a pentelic head of Pan of the late fifth century B.C., bronze wine vessels of the same century, and a sixteenth-century Persian dish found near Teheran.

A special exhibition of manuscripts, printed books, prints, drawings, and medals illustrating the history of coronations in England was open from May 1 to Dec. 31. (V. R.)

**British Pacific Islands:** see PACIFIC ISLANDS, BRITISH.

**British Somaliland:** see SOMALILAND, BRITISH.

**Broadcasting.** The most important factor in American broadcasting during 1937 was the listening audience. This has continued to expand steadily. Today there are approximately 24,500,000 radio homes and 4,500,000 automobiles equipped with radios. Personal interviews and mechanical recorders show that the average set is tuned in for 5.1 hours daily, as against 4.3 in 1934. Of course this figure does not accurately represent total active listening time, since the radio is turned on in many homes merely as a steady background of sound while the housewife does her morning work or the tired husband reads his evening paper. This is an important factor to bear in mind when considering the effectiveness of radio as an educational or propaganda medium. Simple material is most easily apprehended aurally while more complicated matter is best understood visually.

The best evidence that radio is still young is the steady rise in

profits from broadcasting during the 1937 "recession." One of the major networks reported \$4,000,000 profit, which represents a 25% increase over 1936. Along with increased profits, 1937 also witnessed the widespread unionization of radio actors, announcers, producers, engineers and musicians. Whereas radio engineers in New York four years ago worked sixty hours a week for \$29, today, strongly unionized, they work a maximum of forty hours for \$65.

With more than one-half of the total broadcasting time given over to music the steady trend toward better music was symbolized on Christmas Day by the unforgettable concert of Arturo Toscanini conducting the National Broadcasting Company's Symphony Orchestra. Here was radio music at its finest. The mechanical techniques of microphone control combined with exceptional musicianship enabled some 20,000,000 Americans to hear great music better than they could have heard it in the concert hall. Until the N.B.C. Orchestra was organized the concerts of the New York Philharmonic Orchestra were the highlight of symphony broadcasts, but they are now outranked by the studio broadcasts of the special orchestra organized for Toscanini's ten radio concerts.

Musical taste has been further stimulated by the increasingly widespread use of electric recordings of classical music by independent stations. The New York station WQXR, which devotes most of its time to good music programmed in advance, has developed a tremendous following. It began as an experimental station and is now commercially licensed. By training the most simple element of musical enjoyment, recognition, radio is rapidly stimulating the appreciation of good music. Advertising executives are revising their preconceived notion that the general public has no taste for the best music.

The number and popularity of dramatic broadcasts is steadily increasing. According to figures released by the National Broadcasting Company, drama, comedy, and poetical readings comprised 17.7% of last year's radio hours. This is an increase of 4.1% over 1936. On the Columbia network there was an even greater emphasis. This chain presented the outstanding dramatic broadcast of the year, the poetical drama, *The Fall of the City*, specially written for radio by the contemporary poet, Archibald MacLeish. A satirical music drama by the modern composer Marc Blitzstein, *I've Got the Tune*, was an outstanding Columbia Workshop presentation. National Broadcasting Company gave a complete George Bernard Shaw play which was revised for radio by the author himself. WQXR presented Ibsen and Wilde plays weekly with the co-operation of the Federal Radio Theatre. Both major networks featured Shakespearean cycles but showed poor judgment in putting on these first-class performances simultaneously. This was carrying competition to a ridiculous extreme.

The political campaigns utilized radio more than ever before. Effectiveness of radio delivery is today an important factor in the life of the politician. When Supreme Court Justice Black issued the most important statement of his career he specifically selected radio to explain his position. The press has recognized the steadily increasing importance of radio as a news medium by acquiring more and more radio stations.

There is less restrictive radio censorship in the United States than in any other country. Such censorship as there is does not come from the Government, but arises either because of commercial commitments or the natural timidity of big business. At the same time experienced radio commentators are free to voice every kind of opinion and advertisers no longer hesitate to sponsor them.

The problem of combining good radio technique with worthwhile education is being faced more realistically. Although the 1937 National Conference on Radio in Education witnessed the

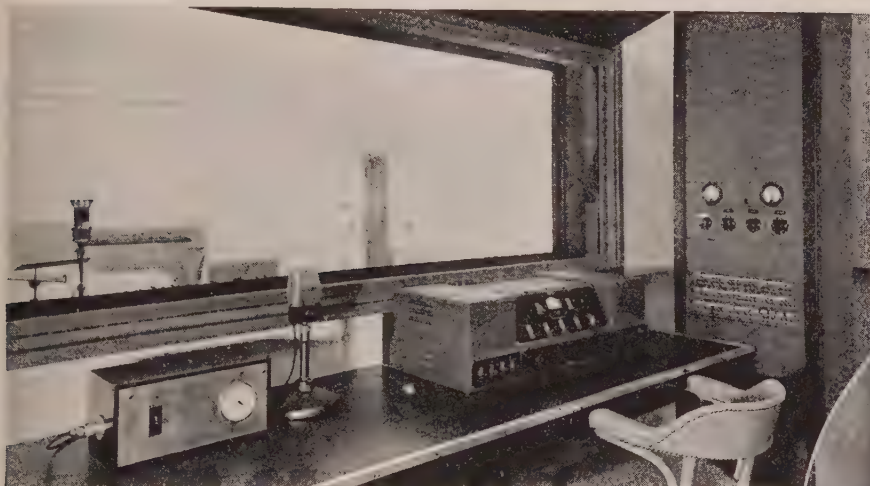




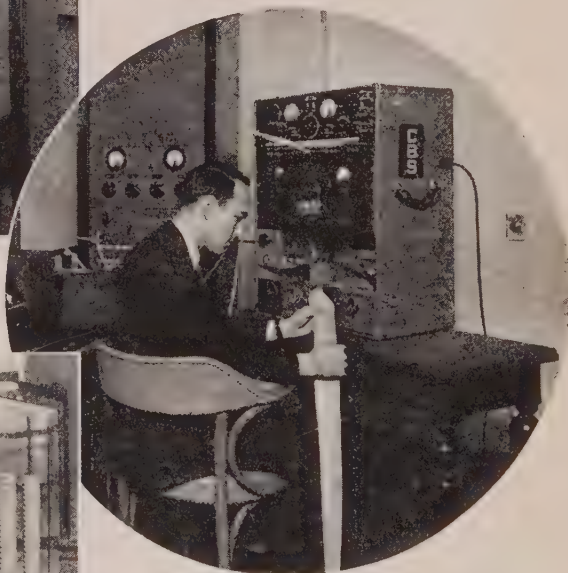
A NEW YORK RADIO THEATRE where large audiences may see and hear the production of a radio program



MASTER CONTROL DESK of broadcasting station where all local program and network switching facilities are concentrated



CONTROL ROOM of broadcasting station. At right, control operator's console which can mix sound from six studio microphones. At left, program director's position, in front of the clock



INSTRUMENT FOR AUTOMATIC RECORDING of the properties of a radio broadcasting studio and associated equipment



TRANSMITTER in short-wave station W2XE, Wayne, New Jersey, which broadcasts programs to Europe and South America



EQUIPMENT FOR DIRECT READING of audio transmission measurements on radio broadcast facilities



usual conflict between educators and broadcasters, the realization that good education can also be good entertainment is gaining ground. An outstanding example is George V. Denny's "Town Hall of the Air." This is a debate on current national and international problems by prominent authorities in which the audience participates with challenging questions from the floor. The always spontaneous and exciting round table discussion of the University of Chicago professors remains the best adult educational program on the air. Columbia's "American School of the Air" is the outstanding daily educational feature. In hundreds of public schools this program is required listening and it is also lively radio entertainment.

At present, 1937, thirty-eight broadcast licences are held by colleges and universities. Their history has been a long struggle due to inadequate financial support and insufficiently trained personnel. In several Mid-Western States these non-commercial stations are more popular than many of their money-making rivals. Most of them devote half their time to pure entertainment but win standing and support with well-presented educational programs. They have a great advantage in their ability to serve the special needs of local areas and to implement broadcasts with printed material, listener groups, or classroom instruction.

The Federal Government has entered the field of radio education with many worth-while programs sponsored by the Office of Education. "Let Freedom Ring," which dramatized the history of civil liberties in this country, had the particular merit of presenting the liberal point of view on such issues as child labour and racial intolerance. Another program, entitled "Brave New Worlds," related the history of Latin America in dramatic form. There is maintained in Washington a script exchange bureau which has distributed thousands of manuals and suggestions on educational broadcasting techniques.

In the short-wave sphere, the Boston station WIXAI, has enabled the whole world to hear Harvard university lectures. The Federal Communications Commission is now considering the advisability of reserving a portion of the short-wave band exclusively for educational purposes. The technical improvements in receiving sets have made it possible for everyone to hear broadcasts from the rest of the world. This has created some concern about the effect of the Communist or Fascist propaganda which Russia, Italy, and Germany are now directing to the United States. American short-wave stations are also devoting more attention to programs specifically adapted to the needs of foreign listeners.

Television is still "around the corner" and may stay there for another five years. Before television sets find general sale or acceptance the obstacles of expense and technical improvements must be met. Radio makes its money from advertising and it is questionable whether advertisers think enough of the television medium to spend the vast sums required for television broadcasting.

Improvements are being made both in reception and transmission, but much remains to be done. In regular radio broadcasting and reception technical improvements continue. The past year has brought greater transmission efficiency. Short-wave broadcasting from remote pick-ups has been perfected.

Radio has had an eventful year. Progress has been made along all of its many fronts. New problems have arisen that 1938 will have to solve—development will never lag while the two purposes of American broadcasting, to serve "public convenience, interest, and necessity" and to make money, move along together.

(H. V. K.)

**Great Britain.**—Nothing stands still in broadcasting, and this fact is as amply borne out in the history of European broadcasting during 1937 as in that of earlier years. Rapid growth of the

listening public, increasing use of the short-wave band for long-distance transmissions, and the advent of television, have, among other factors, concurred to accelerate developments of all kinds and to put fresh problems for the world's broadcasting amateurs and experts to solve.

British broadcasting entered on a fresh decade of its existence in Jan. 1937 with a new charter and licence granted to the British Broadcasting Corporation by Parliament after consideration of the Ullswater Committee's report. Under this charter, the B.B.C. was expressly charged with responsibility for the Empire and television services.

The distribution of programs in various parts of the country greatly improved in 1937 by the separation of the Welsh and the West of England services, the establishment of a new transmitting station in Anglesey to serve North Wales, and of a new high-power transmitter at Stagshaw to serve the north-east of England. A review of the year's programs broadcast through the National and Regional services demonstrates the rich array of the British people's culture and interests, and gives proof of the extent to which modern broadcasting reflects the current events of the day. Foremost among the year's programs was the broadcast of King George VI's coronation, marking as it did the first occasion in history when the crowning of a British monarch has been carried beyond the confines of Westminster Abbey into all parts of the kingdom and the Empire. The subsequent royal visits to Scotland, Wales, and Northern Ireland were recorded in the B.B.C.'s programs, as was also the Naval Review at Spithead. Important events in the civic, industrial, and commercial spheres continued to find expression through the various wavelengths. The microphone brought sporting interests into the listener's home with commentaries on the *England v. New Zealand* test matches, the draws for the fourth round of the Football Association Cup, the draw for the Davis Cup, and a wide array of events among other sports and pastimes.

Music continues to bulk large in British broadcast fare. As in all fields of its activities as a national institution, but more especially in this, the B.B.C.'s dual position of providing its listeners with suitable programs and of acting at the same time as a patron of the arts, becomes more apparent with each year. British broadcasting in 1937 maintained on a permanent contract basis more than 400 orchestral musicians in its Symphony Orchestra and its various other orchestras in London and the provinces, and gave engagements to thousands of artists. Its contribution to the London concert world included the provision of the summer Promenade Concerts, the B.B.C. Symphony Concerts during the winter season, and the London Music Festival, for the last named of which it secured the return to England, after an absence of two years, of Toscanini. The B.B.C. lent its support, financially and by way of broadcasting, to the leading orchestral and choral societies, both in London and the provinces, and also to the Royal Covent Garden Opera season.

During 1937, dramatic productions in the studios showed a considerable development of "feature programs," dealing with such subjects as the history of journalism, the early days of the steamship, Hadrian's Wall, the anti-slavery movement, the Sheffield steel industry, and the Duchy of Cornwall. There was also a marked increase in the number of plays specially written for broadcasting. Light music and variety, both from B.B.C. studios and from cinemas and music halls, figured prominently in the programs, the most notable event in the variety broadcasts being the Royal Command Performance. Talks and discussions covered topics and subjects of every conceivable kind, but paid particular attention to events and movements of the day; in this sphere especially, broadcasting lent its support to the Government's Health Campaign. In addition to the religious services broadcast





GEORGE BURNS and GRACIE ALLEN

→  
RUDY VALLEE



JACK BENNY



→  
BOB BURNS of "bazooka" fame and  
Van Buren, Arkansas



JOHN BARRYMORE, radio's leading in-  
terpreter of Shakespearean roles

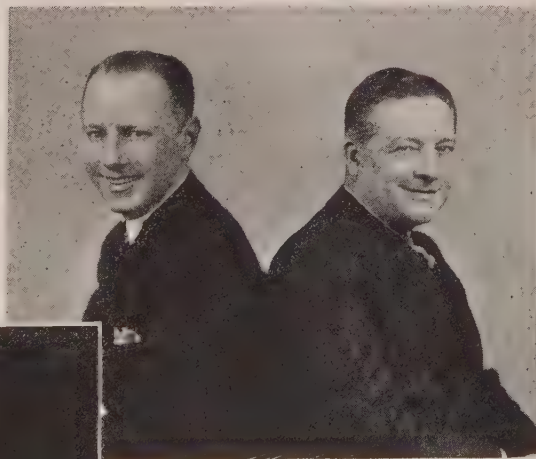


FRED ALLEN

BING CROSBY, whose broadcasts won  
him a college degree in music



A POPULAR TEAM OF RADIO COMEDIANS, Fibber Mc-  
Gee and Molly



AMOS (Freeman Gosden) and ANDY  
(Charles Correll)



EDGAR BERGEN, ventriloquist, and  
Charlie McCarthy



W. C. FIELDS, star of stage and  
screen, made his radio debut in 1937





Top: CLEM McCARTHY FROM THE TRACK

Above: FOOTBALL

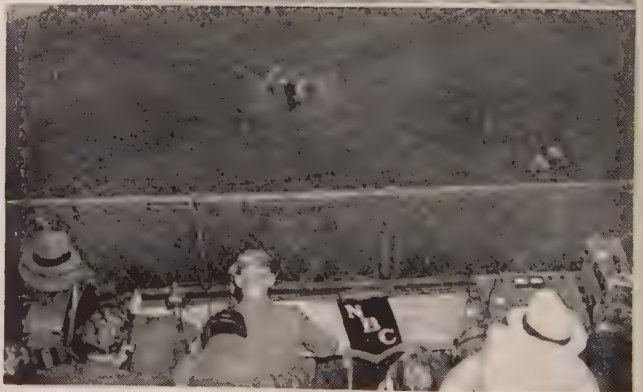


TENNIS

Right: DESCRIBING THE FLOODS



AT THE AMERICA'S CUP RACES



BASEBALL

on Sundays and weekdays, a special series of talks leading up to the Oxford Conference on "Faith and Order" and the Edinburgh Conference on "Christian Life and Work" was broadcast. In different spheres of radio productions, the advantages of the recording processes now available became increasingly apparent. Mobile recording vans with a new method of editing records made it possible to broadcast composite sound records of events only a few minutes after their occurrence.

The value of the wireless medium as an asset to charitable and social causes can be gauged by the fact that broadcast appeals in 1937 resulted in the subscription by listeners of a total sum approximating £150,000 to charitable institutions. Appeals broad-

cast in the Children's Hour for children's charities brought in further sums totalling more than £3,000. S.O.S. and police messages broadcast from all transmitters during the year reached a total of 1,213. Messages transmitted in connection with illness registered a success exceeding 57%; police messages calling for witnesses of accidents, 38%; in relation to crime 23%, and for other special purposes approximately 37%.

The increasingly important part that wireless is playing in education is shown by the fact that at the end of 1937 the number of schools in which sets had been installed to receive school broadcasts had increased, from the 1936 figure of 5,750 to 7,751. In the field of adult education, the discussion group movement, sponsored



by a new Central Committee for group listening, continued to register newcomers.

In 1937 the B.B.C.'s Empire service completed its fifth year of operation. The daily schedule of transmissions embodied minor modifications, which raised the aggregate hours of transmission to about 18 a day. There was a marked increase in the rebroadcasting of the Empire programs from local stations and also in their distribution over the live network of wireless exchanges. Television made some important advances during the year, and at the end of 1937 the London television service still remained as the only public service of television in the world to reach viewers in their homes. (See also TELEVISION.)

**Europe.**—Turning to Europe generally, the influence of broadcasting, internationally and socially, is growing steadily. Statistics relating to numbers of listeners show that at the end of 1937 Denmark still led the field, in so far as wireless licences per head of population were concerned, with 704,062 licences (population 3,706,349). In sheer numbers of registered listening sets, the seven leading countries were:

Germany .....	9,087,454
Great Britain .....	8,479,500
France .....	4,163,692
Sweden .....	1,041,737
Belgium .....	1,008,169
Poland .....	861,256
Italy .....	795,000

The various problems of the congestion of European wavelengths continued to confront the broadcasting authorities of all countries during 1937, and it is to be hoped that successful measures of solution may emerge from the International Telecommunications Conference held in Cairo in Feb. 1938. The Lucerne Plan, drawn up by the European Broadcasting Convention in 1933, has had a large measure of success in the regulation of the medium-wave band through the synchronization of stations; in the long-wave band it has been less successful owing to the number of countries demanding a long-wave, and a lack of general acceptance of the plan because of the reduced separation entailed between stations. Moreover, whereas until recent years there was no congestion of the short wavelengths (a problem not dealt with in the Lucerne Plan), these are now being used to such an extent for broadcasting that the problem of mutual interference is becoming rapidly more serious. In fact, all the principal European broadcasting organizations expanded their short-wave services in 1937 more especially with a view to the extension of foreign language transmissions. The latest country to embark on such a service was Great Britain, which started transmissions in Arabic on Jan. 3, 1938. There was a notable increase of co-operation between the various European broadcasting organizations in regard to the interchange of programs and commentaries on important events. Among events that thus secured almost European-wide broadcasts were: the "New Year Greeting to all the World," collected from many European countries and redistributed through Berlin; Princess Juliana's wedding; the coronation ceremony and celebrations; the King of Denmark's silver jubilee, and the funerals of Signor Marconi and President Masaryk. There was also a considerable interchange of musical programs. (See also ADVERTISING; AIRPORTS; *Safety*; RADIO, SCIENTIFIC DEVELOPMENTS OF; TELEVISION.) (J. C. W. R.)

**Brown Shirts,** the first semi-military organization formed by Hitler and Capt. Röhm from the remnants of secret military groups that continued to make war and practise murder against Germany's enemies months after the Kaiser's downfall in 1918. Their purpose is to spread the doctrines and

promote the power of the Nazi Party. They were named from the inexpensive brown shirt which was the most characteristic part of their uniform. They are generally known in Germany as "SA," i.e., *Sturm-Abteilungen* or Storm Troops. They probably numbered more than two million at one time, but were greatly reduced in power and numbers when Röhm was executed in the Blood Purge of June 30, 1934, and are now commanded by Viktor Lutze. Much more important at present are the "Black Shirts," first organized in 1926 from among Brown Shirts who were picked for their physical strength and political reliability. They are known as the "SS," i.e., *Schutz-Staffeln* or Élite Hitler Protective Guard, now under the command of Heinrich Himmler. (See BLACKSHIRTS; GERMANY; NATIONAL SOCIALISM; NAZIS.)

(S. B. F.)

**Brunei,** small sultanate in N.W. Borneo (*q.v.*), under British protection since 1888, administered since 1906 by a British resident. Area *c.* 2,500 sq.mi.; chief town, Brunei (pop. 10,500); population about 34,000, including 60 Europeans. The interior is mainly jungle; timber, oil, natural gas, cutch (mangrove extract), and rubber are produced and exported. There is communication with Labuan by wireless and by regular steamer. Revenue and expenditure in 1935 were £94,900 and £91,700 respectively; imports were valued at £281,800 and exports at £432,800.

**Brussels,** capital of Belgium, as of Brabant province, on the Senne, 25mi. from Antwerp (ship-canal connection and large docks), 165 from Paris and 200 from London. Area (1921 delimitation): 12.7 sq.mi.; pop. (1936): 1,258,191—city only, 195,268. Greater Brussels is divided into 15 communes—most central: Schaerbeek (123,612), St. Josse-ten-Noode (30,001), Etterbeek (47,846), Ixelles (86,306), St. Gilles (63,140), Anderlecht (87,145), Molenbeek-St. Jean (65,551), Koekelberg (14,521). There are three main railway stations, an airport (Haeren, 4 miles N.N.E.), and broadcasting station. Brussels, more administrative and cultural than commercial, has many wealthy residents. The final conference of Oslo Powers (*see* Norway) ended April 17; that on Far-Eastern hostilities (Nov. 3–24) remained conclusive. Royal visitors included Kings Gustaf of Sweden (February; State) and Carol of Rumania (July; private). At Zellick military aerodrome (May) fire destroyed Professor Piccard's stratosphere balloon. (H. Fw.)

**Bryn Mawr College,** a United States women's college located at Bryn Mawr, Pa., had an enrolment of 534 and a faculty of 85 for its 1937–38 session. Following its fiftieth anniversary celebration in 1935, Bryn Mawr college started a new building program. During 1937 a new science building and a new dormitory were begun and plans were being completed for a wing to the library to house the Art and Archaeology Departments when the funds were in hand. These new buildings will provide facilities for an extensive academic program combining formal course work with independent and tutorial work. The honours system of independent study and the establishment in 1937 of a final examination for all Bachelors of Arts paved the way for this reorganization of undergraduate courses. Recognition of an Independent Unit of Work, equivalent to work in one graduate seminary, as credit toward the Ph.D. degree, and a similar revision of the M.A. requirements in 1937 influenced the graduate curriculum. The greatest stimulus, however, was Bryn Mawr's plan for the co-ordination of the teaching of sciences. This new science curriculum integrated the work of the biology, physics, geology, chemistry and mathematics departments and promoted study in the fruitful borderline research fields such



as geophysics, biophysics, biochemistry. The plan, which was in partial use during 1937, will apply to all advanced work in the science departments when the Science building is completed in 1938. (M. E. PA.)

**Buckwheat.** The production of buckwheat in the United States in 1937 was estimated by the Department of Agriculture as eight per cent larger than 1936. The crop in 1937 was 6,777,000 bushels. In 1936 production was 6,285,000 bushels. The crop in 1937 was 18 per cent smaller than the average five-year (1928-32) production of 8,277,000 bushels. The acreage of 427,000 acres harvested in 1937 was 14% larger than the harvested acreage of 1936, which totalled 375,000 acres, but less than the five-year average of 568,000 acres.

In New York and Pennsylvania, the two leading States in production, the 1937 crop in each case was estimated at approximately 2,250,000 bushels. In New York, however, the 1937 yield was about 200,000 bushels larger than the 1936 crop, while in Pennsylvania it was about 200,000 bushels under the 1936 production. The larger part of the increase in the 1937 acreage over 1936 was chiefly in these two States. Yields were below average in 1937 in Minnesota and the adjoining States and in most other States the yield was only an average crop or slightly higher.

The yield of buckwheat per acre in the United States in 1937 was estimated at 15.9 bushels. In 1936 the yield was 16.8 bushels to the acre. The ten-year average of the Department of Agriculture (1923-32) was 15.7 bushels. (S. O. R.)

**Budapest,** the capital and largest city of Hungary. Pop. (1936) 1,051,804; including Greater Budapest, nearly 1,500,000. Budapest, and in particular its western half, Buda, has grown rapidly of recent years. Its watering-places, and its attractions as a tourist centre, have developed greatly. Its municipal autonomy was slightly curtailed in 1935, but remains extensive. A large program of temporary housing is planned for the forthcoming Eucharistic Congress.

**Buddhism.** During 1937 Buddhist missions continued their work in Great Britain, the United States, and continental Europe, and in India some progress was made with the construction of a temple at New Delhi, the foundation-stone of which was laid in 1936. The annual commemoration of the Buddha's Enlightenment ("Wesak") was celebrated in London at a meeting presided over by Dr. Ba Maw, Burmese chief minister, and at the end of May a Buddhist opera, *Prince Siddartha*, by Count Axel Wachtmeister, was performed several times at the New Scala theatre. From June 16 to 18 a Second International Buddhist Congress took place in Paris, under the presidency of M. Masson-Oursel, of the Ecole des Hautes Etudes, attended by representatives from China, Japan, and Cambodia. It was announced during the year that a Buddhist temple is to be constructed at Los Angeles, Calif. Search for the new incarnation of the Dalai Lama, the spiritual head of Tibetan Buddhism, who died in 1934, was continued, but certain success has not yet been reported. On Nov. 30, the Tashi Lama (*see* TIBET) died in exile in Western China.

**Budget.** The American budget system was established by the Budget and Accounting Act of 1921, which directs the President of the United States to submit to Congress, on the first day of each regular session, a statement of the actual or expected financial condition of the Treasury and amounts of revenues and expenditures for the preceding, current, and ensuing fiscal years, together with a statement of financial policy for the latter year.

On September 15 of each year estimates of departmental expend-

itures for the ensuing fiscal year are submitted to the Bureau of the Budget. The period between this date and submission by the President of the budget to Congress is devoted by the bureau to adjustment of the estimates to accord with expenditure requirements, expected revenues, and the Presidential program, and to the preparation of the budget document.

Upon submission to Congress the budget estimates of appropriations are reviewed by the House and Senate appropriation committees, reported to both Houses for consideration, and enacted with such changes from the budget estimates as Congress may desire. The appropriations are made directly to the departments and are subject to an apportionment by the director of the Bureau of the Budget at the beginning of the fiscal year of the amounts that may be spent during each month or other portion of the year. Another check upon expenditures is provided by the final audit of the general accounting office.

New legislation or other events subsequent to the submission of the budget estimates may cause greater expenditures than estimated, which are provided for by deficiency or supplemental appropriations. Shortly after the adjournment of each regular session of Congress, it is customary for the President to make a summary statement of the condition of the budget for the current year on the basis of revised estimates of revenue and expenditure.

**1938 Appropriations for Governmental Departments and Agencies  
as shown in the 1939 Budget Statements**

Legislative Establishment . . . . .	\$ 24,355,975.78
Executive Office and Independent Establishments:	
Executive Office . . . . .	\$ 511,478.00
Civilian Conservation Corps . . . . .	350,000,000.00
Civil Service Commission . . . . .	75,502,000.00
Railroad Retirement Board . . . . .	144,310,077.00
Social Security Board . . . . .	258,740,678.00
Veterans' Administration . . . . .	585,832,000.00
Other Independent Establishments . . . . .	119,715,087.00
Total, Executive Office and Independent Establishments . . . . .	\$1,534,611,320.00
Departments:	
Department of Agriculture:	
Agriculture proper . . . . .	\$129,750,273.00
Agricultural Adjustment Program . . . . .	608,325,766.00
Farm Tenancy Act . . . . .	20,000,000.00
Public Highways . . . . .	180,400,000.00
Total, Department of Agriculture . . . . .	\$938,476,039.00
Department of Commerce . . . . .	\$ 43,388,342.00
Department of the Interior . . . . .	147,048,536.10
Department of Justice . . . . .	41,012,765.00
Department of Labor . . . . .	23,681,920.00
Navy Department . . . . .	526,554,179.00
Post Office Department . . . . .	784,748,053.00
Department of State . . . . .	19,340,713.34
Treasury Department:	
Treasury Department proper . . . . .	257,180,797.94
Payments to Federal land banks . . . . .	40,000,000.00
Interest on the Public Debt . . . . .	927,000,000.00
Public Debt Retirements . . . . .	579,725,000.00
Old-age reserve account . . . . .	385,000,000.00
Total, Treasury Department . . . . .	\$2,188,905,797.94
War Department:	
Military . . . . .	\$415,781,004.00
Nonmilitary . . . . .	183,157,847.00
Panama Canal . . . . .	10,573,760.00
Total, War Department . . . . .	\$609,512,611.00
District of Columbia . . . . .	\$48,285,141.00
Total appropriations . . . . .	\$6,929,921,393.16
Deduct amounts payable from:	
Postal revenues . . . . .	\$752,500,000.00
District of Columbia revenues . . . . .	43,285,141.00
Total payable from general fund . . . . .	\$6,134,136,252.16
Relief . . . . .	1,500,000,000.00
Grand Total payable from general fund . . . . .	\$7,634,136,252.16

Note: The above appropriations include reappropriations of unexpended balances of prior years and exclude 1938 appropriations made available in 1939. (D. W. B.)



**Great Britain.**—The national accounts for the year ended March 31, 1937, showed a deficit of £5,597,000 in place of an estimated surplus of £484,000. Income tax, surtax, and estate and inheritance duties had failed by an aggregate of £5,733,000 to reach expectations. This was offset by excess yields of £2,140,000 in stamp duties and of £3,757,000 on customs, but the total shortfall of revenue was a little over £1,000,000. On the expenditure side, the defence services cost £7,821,000 more than had been estimated, although the budget had provided £20,000,000 for supplementary defence votes. There was, however, a saving of £3,143,000 on the civil votes (including supplementaries), and the fixed debt charge yielded £13,127,000 for the redemption of debt. (Under the fixed debt charge, any saving on interest and management of the national debt was automatically transferred to sinking fund.) Hence, although expenditure totalled £830,313,000, excluding the self-balancing post office account, against revenue of only £824,716,000, there was a true net surplus of £7,530,000.

Mr. Neville Chamberlain, opening his budget on April 20, estimated ordinary revenue for 1937-38, on the existing basis of taxation, at £847,950,000, an increase of £23,234,000 over receipts in the previous year. He expected to obtain £22,223,000 more from income tax and surtax, £1,010,000 more from estate duties, and £12,218,000 more from customs and excise, but there would be a drop of £13,600,000 in miscellaneous (non-tax) receipts. The fixed debt charge was kept at £224,000,000. The civil votes (including £10,000,000 provided for eventual supplementary votes) showed an increase of £20,046,000 over issues in 1936-37, the defence votes an increase of £12,196,000. In addition, expenditure totalling £80,000,000 would be met by a special defence loan. Mr. Chamberlain had already taken power to borrow £400,000,000 for rearmament over five years, and a loan of £100,000,-

000 was issued a week after the budget. The total increase of expenditure was placed at £32,535,000, and a prospective deficit of £14,898,000 had therefore to be made good.

Minor adjustments of taxation included measures to restrict legal evasion of income tax, changes in customs duties to implement the Anglo-Canadian trade agreement, and the abolition of the male servants licence duty.

The major source of additional revenue in 1937-38 would be the increase of the standard rate of income tax from 4s. 9d. to 5s. in the pound. This would yield £13,000,000 in the current year and £15,000,000 in a full year. The Chancellor finally announced the imposition of a new tax on the growth of company profits, to be known as the National Defence Contribution (*q.v.*). This would yield only £2,000,000 in 1937-38. The budget was therefore balanced with revenue estimated at £863,100,000 and expenditure at £862,800,000, excluding the self-balancing post office account and the borrowing for defence. (*See also UNITED STATES: Recession, 1937.*)

(H. V. H.)

**Buenos Aires,** capital of Argentina, located on the Rio de la Plata; mayor (*intendente municipal*), Mariano Vedia y Mitre. The area is 115 sq.mi.; population (official estimate, 1935) 2,388,645, making it not only the largest city south of the equator, but the world's second Latin city and the third largest city in America as well. With its suburbs, it has approximately 3,500,000 population. The city is co-terminous with the federal district and entirely distinct from the Province of Buenos Aires. It is governed by a mayor appointed by the president of the republic, and an elected council. The year 1937 was featured by a remarkable building boom which, it was predicted, would exceed that of 1928. The most important construction begun, apart from office and apartment buildings, was a huge underground parking space beneath the city streets, which is expected materially to reduce traffic congestion. In addition, several new government buildings were begun, including a new edifice for the ministry of finance, estimated to cost 7,415,609 pesos (approx. \$2,225,000). The municipality itself was preparing a fifty-million-peso building program. Buenos Aires is the most important port in all South America. In 1936 84% of Argentine imports entered through it. (L. W. BE.)

**Building and Building Industry.** The recovery in building construction, which showed encouraging progress in 1936, started 1937 with even brighter prospects, but suffered a set-back toward the middle of the year, especially in the residential field. Its total volume will, therefore, show only a small net advance over 1936, remaining at approximately one-third of the 1929 or one-fourth of the 1925 (peak year) figure.

Building has been the industry hardest hit by the depression and the slowest to revive. Normally, its activities are divided, roughly half and half, between residential and non-residential construction. Even in 1929, when it had suffered considerable decline, it was estimated to be a nearly \$6,000,000,000 industry. In the years 1933 and 1934 it dropped almost out of sight. Only the extensive volume of non-residential public works kept the industry alive.

The failure to build new dwellings during so many years has produced a housing shortage as acute as that which followed the World War. There is general agreement that 2,000,000 new dwelling units are required besides the unfit ones which need replacing. Yet apparently the demand is not effective, or the industry has failed to interpret it correctly. Some observers believe that the present need is for rental units rather than home ownership, and all agree that the largest potential market lies among income

British Budget  
(000's omitted)

Expenditure	Estimate 1936-37	Actual 1936-37	Estimate 1937-38
Interest and Management of Debt . . . . .	£ 224,000	£ 210,873	£ 224,000
New Sinking Fund . . .	..	13,127	..
Other Consolidated Fund Services . . . . .	11,300	11,656	11,500
Defence Votes* . . . .	178,251	186,072	198,268
Civil and Revenue Votes†	384,346	381,158	429,080‡
Total . . . . .	797,897	802,886	862,848‡
Self-balancing Expendi- ture and Revenue			
Post Office . . . . .	69,344	71,880	75,198‡
Road Fund . . . . .	26,500	27,427	‡
Revenue			
Income tax . . . . .	259,000	257,237	288,150
Surtax . . . . .	56,500	53,540	58,000
Estate, etc., Duties . . .	89,000	87,990	89,000
Stamps and other Inland Revenue . . . . .	28,500	30,870	30,500
National Defence Contri- bution . . . . .	..	..	2,000
Customs . . . . .	207,525	211,282	219,850
Excise . . . . .	110,000	109,500	113,150
Motor Vehicle Duty . . .	5,000	5,300	34,000‡
Post Office (net) . . . .	11,256	11,170	11,800
Other Non-tax Revenue .	31,600	30,500	16,650
Totals . . . . .	798,381	797,289	863,100

\*Including margin of £20,000,000 for supplementary votes in 1936-37 estimates; excluding sums to be raised by loan in 1937-38.  
†Including margins for supplementary estimates: 1936-37, £5,600,000; 1937-38, £10,000,000.  
‡Up to 1937 the motor vehicle duty was divided between the exchequer share and the self-balancing road fund account; for 1937-38 the whole revenue and corresponding expenditure were brought into the ordinary budget. *Per contra*, broadcasting revenue and expenditure (amounting to £2,870,000) were transferred to the self-balancing post office account.



groups below those to which the industry has catered in the past.

The following comparative table of the state of the industry in 1936 and 1937 was prepared by the U.S. Bureau of Labor Statistics, Division of Construction and Public Employment:

*Estimated Cost of Building Construction in Reporting Cities of 2,500 Population and Over, Calendar Years of 1936 and 1937*

Class of Construction	Estimated cost of building construction Calendar year of		
	1937	1936	Percentage change
All construction . . .	\$1,650,901,097	\$1,482,761,951	+11.3
New residential . . .	729,913,571	695,216,807	+ 5.0
New non-residential .	556,687,404	475,417,075	+17.1
Additions, alterations, and repairs . . . .	364,300,122	312,128,069	+16.7

From the same source comes the following:

*Number of Families Provided for in New Residential Construction in 257 Identical Cities, 1921 to 1936*

Year	Families Provided for	Year	Families Provided for	Year	Families Provided for
1921	224,545	1927	406,095	1933	25,879
1922	377,395	1928	388,678	1934	22,063
1923	453,673	1929	244,394	1935	55,810
1924	442,919	1930	125,322	1936	115,365
1925	491,222	1931	98,178	..	..
1926	462,214	1932	27,381	..	..

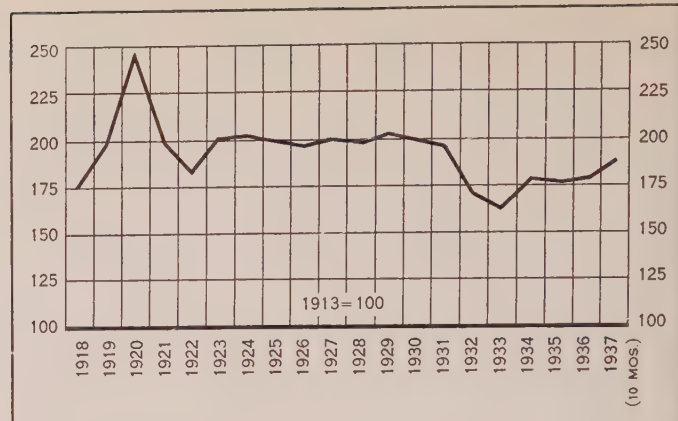
In the hope of hastening the recovery of this basic industry, President Roosevelt addressed a special message to Congress on Nov. 29, 1937, urging certain legislation which may prove helpful to private enterprise in residential construction. For building by public authorities, see HOUSING: *United States*.

**BIBLIOGRAPHY.**—Publications of the U. S. Bureau of Labor Statistics; Publications of the F. W. Dodge Corporation; Message of President Roosevelt to Congress, November 29, 1937; *The Housing Market*, report by the National Housing Committee, December 3, 1937. (E. E. Wo.)

**Great Britain.**—Building is one of the most diverse and competitive of industries in Great Britain, and its prosperity relies in a large measure upon intense organization, co-operation, and co-ordination in all its branches. Efforts are continually being directed towards improving the standard of technique and amenity in every building erected, while with new materials and methods of construction, collaboration with the scientist has become increasingly imperative. Education in building technology must therefore be framed to fulfill the highly specialized requirements of the numerous branches of the industry.

During 1937, activity in the industry generally maintained a high level, despite the threat that the demands of the armament program would dislocate normal trade and that there would be a shortage of steel. Happily, this anxiety was allayed by those in control and by the Government's action in controlling the price of steel. All the indications point to a steady continuance of production. Though undoubtedly there was a falling off in speculative house building in the London area, it has continued actively in other parts of the country. There is still a great deal of housing work to be accomplished in carrying out the Government's plans for dealing with slum clearance, overcrowding, and the like. As a result of the increased prosperity in national industries, commercial and industrial building has made a good showing, and the easier position with regard to steel supplies should stimulate still further work of this class.

As a result of close collaboration between the various branches of the industry and those responsible for scientific research in the production and application of new materials, mechanical ap-



**COSTS OF CONSTRUCTION** (all types): index of Associated General Contractors of America, Inc.

pliances, etc., development and speed in construction are noticeable in many directions. Reinforced concrete, although at one time still hampered by by-laws made before its general use, has now made rapid strides, to the great benefit of the cement industry. Development will be further encouraged now that the efforts of the industry to get the authorities to amend the regulations have been successful.

Steel-framed buildings continue to be in general demand on account of the rapidity with which they may be erected. Electric arc welding has been used with success in certain types of the larger buildings of this class. With the exception of certain civic buildings, the impedimenta of masonry is being discarded in favour of brick and concrete panel walls faced with stucco, or artificial stone, faience, metal, and glass veneers. On the Continent of Europe and in America, glass brick walls are being used with increasing success. By this method, unlimited light may be admitted to a building without departing from the normal standards of steel-framed construction. This is ideal for industrial buildings, and a rapid development may be expected in this form of construction, when certain technical difficulties have been overcome. Internally, glass, wood, stone, and metal veneers, in conjunction with concealed lighting, have been developed to a very high degree, and are now accepted as the normal standard of good building practice.

Architects have responded to the public's increasing demand for a living architecture, by designing elevations which are in many cases essays in architectural composition. Straightforward solutions of design problems have been produced by clever handling of contrasting masses and shapes, relieved by simple surface treatments or sparsely used detail. The proximity of modern work with its fresh and interesting expression, tends in many cases to increase the obsolescence of older buildings, and necessitates a desire for their reconstruction. Depreciation in this respect should provide the impetus for a greater volume of new work. (See also ARCHITECTURE; HOUSING.) (N. KE.)

**Bukharin, Nikolai Ivanovich** (1888— ), former Bolshevik leader, born and educated in Moscow; joined the Communist party, 1904; was exiled in 1910; escaped and joined Lenin in Austria, where they published *Pravda*, of which Bukharin was later editor in Russia (1918–28). During the War he worked with revolutionaries in Switzerland, Scandinavia, and New York; and returning to Russia after the February revolution, he assisted in the organization of the October revolution, becoming a member of the Higher Economic Council. In 1926 he succeeded Zinoviev as president of the executive committee of the Communist International; but, accused of falsifying Marxism into a scholastic sociology and sus-



pected of Trotskyist leanings, he was removed in 1928. After submission, and in spite of his opposition to the liquidation of the kulaks, he was re-admitted to the party and office in 1929; became editor of *Izvestia* in Feb. 1934, but in March 1937 he, with Rykov was expelled from the party after being found guilty of betraying the communist cause and working for the restoration of capitalism. He published a number of works on economics and theoretical communism.

**Bulb Flowers:** see HORTICULTURE: *Bulb Flowers*.

**Bulgaria,** a kingdom of south-eastern Europe and member of the League of Nations. Bounded W. by Yugoslavia, N. by Rumania, E. by the Black sea, S.E. by Turkey, S. by Greece. Ruler, King Boris III; flag, white, green, and red, flown vertically.

**Area and Population.**—The area is 39,825 sq.mi. Population (1936) 6,254,000. According to the 1926 census, 81.3% of the population were Bulgarians, 10.5% Turks, 1.9% Pomaks (Bulgarian Moslems), with Germans, Jews, Armenians, Greeks, Russians, etc. The national church is the Bulgarian Orthodox Church, to which in 1926, 4,568,773 persons belonged. There were 789,296 Moslems, 46,931 Jews, 40,347 Catholics, etc. The non-State religions enjoy wide autonomy. Education is free, compulsory, and for the most part State-controlled, although there are also private institutions. The largest towns, with their populations, are Sofia (287,976), Plovdiv (Philippopolis) (100,485), Varna (70,183), and Ruschuk (49,388).

**History.**—After a somewhat unhappy period of parliamentary government since the War, a band of officers made a *coup d'état* and dissolved parliament on May 20, 1934. The constitution was suspended, and the political parties dissolved; although the particular group forming the Government was not always the same. On July 4, 1936, M. Kiosseivanoff was appointed prime minister and minister of foreign affairs. On Oct. 21, 1937, a new electoral law was promulgated, providing for universal suffrage for both sexes (an innovation in Bulgaria). Communists, adherents of violence, State and communal functionaries, and persons without gainful occupations are excluded from the passive suffrage. No party nominations or party candidates are allowed.

A decisive step was taken along the road, entered upon some three years previously, of reconciliation with Yugoslavia by the signature, on Jan. 24, of a treaty, article 1 of which simply declared that "there will be inviolable peace and sincere and perpetual friendship between the kingdoms of Yugoslavia and Bulgaria." In fact, relations between the two countries became cordial, and the barbed-wire entanglements on the frontier were removed. The Macedonian Revolutionary Organization seemed to have lost its power. The idea of a customs union with Yugoslavia was bruited.

**Trade, Communications and Finance.**—Bulgaria is predominantly agricultural. The chief article of export is tobacco, followed by eggs, fruit, cereals, and live animals. Industrial articles are imported, as although industry is State-assisted, its development remains rudimentary. By far the most important customer and source of supply is Germany, which in 1936 supplied 1,940,000 of Bulgaria's total of 3,181,000 levas' worth of imports and took 1,800,000 out of 3,911,000 levas' worth of exports. The trade balance has been favourable since 1933. The budget was balanced in 1937 at 6,163 million levas, and in 1937 at 6,912 million levas (ordinary receipts, 6,344.5 million levas). The leva is nominally 0.7224 gold cents, but premiums are allowed, varying according to the groups of goods and the different foreign currencies.

**Defence.**—Bulgaria is still bound by the Treaty of Neuilly to



KING BORIS of Bulgaria, a devout communicant of the Greek Orthodox Church

limit her army to 20,000 of all ranks, enlisted by voluntary service. The strength of the active army in 1937 was 1,062 officers and 19,030 other ranks. See *Annuaire Statistique* (Sofia, annual). (See also BALKAN ENTENTE.) (C. A. M.)

**Burleson, Albert Sidney** (1863–1937), postmaster general under President Wilson and Texas Representative for twenty-two years, was born at San Marcos, Texas, June 7, 1863. After serving in local offices, he entered Congress in 1891 where he served until appointed to Wilson's Cabinet in 1913. During his term of office he successfully established the newly inaugurated parcel post system, exercised strict control over war time mail, and inaugurated the air mail service. He died at Austin, Texas, Nov. 24, 1937.

**Burma.** Burma lies on the eastern side of the Bay of Bengal, between India and Siam. It fills the vast basin of the Irrawaddy river, rises into the tangled mountain mass on the borders of China, and runs down along the sea in a narrow strip into the Malay peninsula; its length from one extremity to another being 1,200 miles. Burma has an area of 233,492 sq.mi., and a population of 14,667,146, of whom 84% are Buddhists. If certain hill tracts and unadministered areas are included, the total extent of the country is nearly 262,000 square miles. The capital cities of Lower and Upper Burma respectively are Rangoon (pop. 400,415) and Mandalay (pop. 147,932); with the exception of Moulmein (pop. 65,506), there is no other town of importance.

Up to 1937, Burma was a province of British India. On April 1 of that year it was separated from India and placed directly under the Crown, with a governor (Sir Archibald Cochrane) and a legislature of its own. Its constitution is incorporated in the Government of India Act of 1935.

The legislature consists of a Senate of 36 members and a House of Representatives of 132 members; and the administration is in the hands of a Council of Ministers, who are at present six,



and may not exceed ten, in number. A High Court sits at Rangoon, and there are 36 civil districts.

Owing to the ubiquitous monastic schools, the standard of literacy is far higher than in India; practically one in every two men, and one in every seven women, being able to read and write.

Of the total area, less than 12% is cultivated, but over 14% is occupied by forests. Except in a dry zone in Upper Burma, rice is grown everywhere, and irrigation is little required. Oil-seeds come a poor second; and a certain amount of cotton, tobacco, rubber, and tea are produced. Of the forest produce, teak has the lion's share, but there are many admirable timbers.

The mineral wealth of the country is considerable. Rubies, which were once actively mined, have been killed by synthetic competition; but 6,000,000oz. of silver is a normal output, and iron, copper, jade, tin, and wolfram are all met with.

Petroleum, however, which is largely brought down by pipeline to the Rangoon docks, is by far the leading export, with a normal output of 250,000,000gals. or over; and lead, found in the Northern Shan States, ordinarily yields 70,000 to 80,000 tons. Fisheries are a source of revenue, as salt fish is in the staple diet of the people. (ME.)

**Buses:** see MOTOR-BUSES.

**Business Cycles.** Any particular boom-depression sequence, or any particular country's experience, is likely to vary from the standard pattern of cyclical movement in trade, industry, and prices. Therefore, statements about the position on the business cycle reached by the world as a whole in 1937 can only be in general terms. Recovery from depression, which had been noticeable in some countries from 1932 or 1933 onwards, though delayed in others, continued into 1937, but halted before the end of the year. If the turning-point of the cycle be taken as the moment, either when rising costs overtake higher prices and larger turnover, and thus restrict the profitability of industry, or when the output of capital-goods industries begins to decline, then most of the chief industrial countries with liberal economies had passed a peak of the curve during 1937. The same is probably true of the enclosed-economy countries, though these had to some extent insulated themselves from the world cycle.

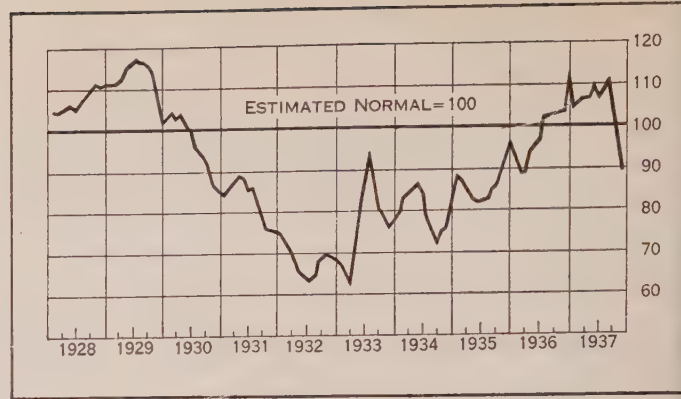
The second of the two tests is the more susceptible to statistical measurement. In the United States, the index of production of investment goods (Federal Reserve Board), after rising to a peak of 104.1 (1929=100) in Aug. 1937, fell to 94.4 in September, and continued to fall. The total of building contracts awarded fell sharply from \$321,600,000 in July to \$207,100,000 in September.

In France, the index of building activity began to decline in May, and that of steel production in August. In Great Britain, the output of iron and steel was better maintained, but the figures of new building (both private houses and commercial structures) showed a downward trend after July; and the building boom had been of outstanding importance in the earlier reflationary period.

In Germany there was no visible recession in building or in the production of investment goods before the end of 1937. Primary producing countries, such as Australia or Argentina, likewise showed little reduction of internal prosperity, though their balances of trade were sharply affected by the fall in commodity prices after April.

The course of world prices by itself would be misleading in this connection; for whereas the slump of 1929 onwards was preceded by no inflation of commodity prices, there was such an inflation in the early months of 1937, the liquidation of which would not necessarily imply a downward phase of the business cycle.

(H. V. H.)



BUSINESS ACTIVITY in the United States: *Annalist* composite monthly index

**Butler, Ellis Parker** (1869-1937), American humorist, was best known as the author of *Pigs Is Pigs*. Born in Muscatine, Iowa, Dec. 5, 1869, he began writing at an early age. After several years of clerking in the local store, he earned enough from magazine articles to come to New York. There he worked for trade journals, writing his first book on interior decorating. Most of his thirty-two productions, however, were devoted to humorous subjects. For thirty years a resident of Flushing, L.I., he served as vice-president of the Flushing National Bank, president of the Flushing Savings and Loan Association, trustee of the Flushing Hospital, and as an active participant in local Democratic politics. He was a founder and former president of the Authors' League of America and a member of the Dutch Treat Club, The City Club and the Authors' Club. His death occurred at Williamsville, Mass., Sept. 13, 1937.

**Butter.** The International trade in butter between about 25 countries on the exporting side and approximately the same number on the importing side was 1,100,342,000lbs. for the 10 months from Jan. 1 to Oct. 31, 1937, the International Institute of Agriculture reports. This compared with 1,115,494,000lbs. for the same period in 1936. The United Kingdom was by far the largest importer, 883,089,000lbs., with Germany second, and accounting for 156,368,000lbs. of butter imports in 10 months in 1937 despite governmental agitation to reduce consumption.

Denmark was the largest exporter, 283,875,000lbs., as reported by the Institute. New Zealand was second among exporters, 268,952,000lbs.; Australia third, with 130,119,000lbs.; the Netherlands fourth, with 104,903,000lbs.; Sweden fifth, with 45,217,000lbs., and the Irish Free State sixth among exporters, with 40,759,000lbs. for the 10-month period.

Although both are large producers of butter the United States and Canada are classed among importing countries, and the Institute reports 10,364,000lbs. by the U.S. and 60,000lbs. by Canada in the foregoing period. For the 12 months of 1937 U.S. production of creamery butter was 1,611,394,900lbs., as estimated by the U.S. Department of Agriculture, and comparable to 1,629,407,000lbs. in 1936. The leading producing States, were as formerly, Minnesota, Iowa, and Wisconsin. In addition there is an annual U.S. production of about 500,000,000lbs. of farm butter, which is consumed on the farm or sold in nearby communities. This is a highly conjectural estimate because there is no feasible way of checking farm butter production, the American Butter Institute points out. The Institute, which was founded in 1908 as the American Association of Creamery Butter Manufacturers, to represent the creamery butter industry, changed its name to American Butter Institute in 1937. Wholesale butter prices in the U.S. in 1937 ranged from a low average of 29.23 cents a pound in June to a high monthly average of 35.06 cents a pound in December. This was for standard butter of about 90 score in Chicago. Prices in



New York, which is farther from producing centres, were higher. Butter consumption in Canada in 1936-37 was 346,304,832lbs., the Ministry of Trade and Commerce reports. This figure approximates very closely the Canadian annual production. For the 10 months of 1937 reported above, Italy imported 4,945,000lbs. of butter; France, 1,312,000lbs.; Japan, 1,164,000 pounds. (See also CHEESE; DAIRYING.) (S. O. R.)

**Caballero, Francisco Largo** (1869- ), Spanish Labour leader and statesman, came of peasant stock and worked as a mason, but was early caught up in the trade union movement, and later became secretary of the General Union of Workers and chairman of the Spanish Socialist party. Imprisoned seven times for socialistic activities, and in 1917 sentenced to death (but afterwards released), after the revolution he was minister for Labour in Azaña's Provisional Government of 1931, holding office till 1933. In Oct. 1934 he was imprisoned on a charge of complicity in the Asturian revolt and, though the public prosecutor called for a sentence of 30 years' imprisonment, he was acquitted by the supreme court in Nov. 1935.

Disliking the coalition with the Left Republicans, Caballero resigned his chairmanship of the Socialist party in Dec. 1935, and on Sept. 4, 1936, succeeded Señor Giralt as premier at the head of a popular front ministry, which remained in office (see SPAIN) till May 15, 1937, when Caballero was forced to resign through the extremist groups—Anarcho-Socialists and the Socialist-Labour union—refusing to work longer with him. A man of marked integrity and a lifelong worker for the proletariat, Caballero, who has since supported M. Negrin owed the downfall of his ministry chiefly to his detestation of communism.

**Cabinet Members.** The following are the members of President Roosevelt's cabinet, all of whom served without change through 1937:

Post	Name	State
Secretary of State	Cordell Hull	Tennessee
Secretary of the Treasury	Henry Morgenthau, Jr.	New York
Secretary of War	Harry H. Woodring	Kansas
Attorney-General	Homer S. Cummings	Connecticut
Postmaster General	James A. Farley	New York
Secretary of the Navy	Claude A. Swanson	Virginia
Secretary of the Interior	Harold L. Ickes	Illinois
Secretary of Agriculture	Henry A. Wallace	Iowa
Secretary of Commerce	Daniel C. Roper	S. Carolina
Secretary of Labor	Frances Perkins	New York

**Great Britain.**—The cabinet of Great Britain, as reconstituted after the resignation of Mr. Baldwin in May 1937, was as follows:

- Prime Minister and First Lord of the Treasury, Mr. Neville Chamberlain;
- Lord President of the Council, Viscount Halifax;
- Chancellor of the Exchequer, Sir John Simon;
- Lord Chancellor, Viscount Hailsham;
- Secretary of State for Home Affairs, Sir Samuel Hoare;
- Secretary of State for Foreign Affairs, Mr. Anthony Eden;
- Lord Privy Seal, Earl De La Warr;
- Secretary of State for Dominion Affairs, Mr. Malcolm MacDonald;
- Secretary of State for the Colonies, Mr. W. Ormsby-Gore;
- Secretary of State for War, Mr. L. Hore-Belisha;
- Secretary of State for India and Burma, The Marquess of Zetland;
- Secretary of State for Air, Viscount Swinton;
- Secretary of State for Scotland, Mr. Walter Elliot;
- President of the Board of Trade, Mr. Oliver Stanley;
- First Lord of the Admiralty, Mr. A. Duff Cooper;
- Minister for the Co-ordination of Defence, Sir Thomas Inskip;
- Minister of Agriculture and Fisheries, Mr. W. S. Morrison;
- President of the Board of Education, Earl Stanhope;
- Minister of Health, Sir Kingsley Wood;
- Minister of Labour, Mr. Ernest Brown;
- Minister of Transport, Dr. Leslie Burgin;

The following ministers do not hold a seat in the cabinet:

- First Commissioner of Works, Sir Philip Sassoon;
- Minister of Pensions, Mr. H. Ramsbotham;
- Chancellor of the Duchy of Lancaster, Earl Winterton;
- Postmaster-General, Mr. G. C. Tryon;
- Paymaster-General, Lord Hutchison;

Attorney-General, Sir Donald Somervell;  
Solicitor-General, Sir Terence O'Connor;  
Lord Advocate, Mr. T. M. Cooper;  
Solicitor-General for Scotland, Mr. J. S. Reid.

**Cadmium.** Up to the present time no ores have ever been mined and treated for their cadmium content alone; the entire world supply is obtained as a by-product in the treatment of residues from zinc and lithopone plants, and from the fume collected in lead and copper roasting plants. No very accurate total production figures are available, since data are entirely lacking from some countries, while those from others overlap, but it is estimated that a production of about 1,000 metric tons annually a decade ago has increased to about 4,000 tons at the present time, of which the United States supplies about one-half, followed by Mexico, Canada, Belgium, Australia, and a number of smaller producers. The first large impetus toward the expansion of production came from the application of the electroplating of other metals, particularly steel, with cadmium, as a protection against corrosion; more recently a large new demand has resulted from the development of cadmium alloy bearing metals for automotive use. Since the possible supply of a by-product metal is determined not by the demand for it, but by the rate of operations on the major metals which it accompanies, the cadmium market is in the peculiar position of being faced with a large and increasing new demand, for which the metal can be obtained only by taking it away from some previous type of consumption, since the possibilities of increasing the present supply are comparatively small; as a result most of the metal used in automobile bearings has been diverted from electroplating, the former being able to stand a higher price than the latter, for which cheaper substitutes are available. (G. A. Ro.)

**Calcutta.** Calcutta is the second largest city in the British Empire, having a population, if Howrah and the suburbs are included, of 1,485,582, of whom 70% are Hindus and 25% Moslems. The capital of the Bengal presidency, it was also before 1912 the capital of British India. It is the centre of the jute manufacturing industry, and possesses one of the most important harbours in the East, although it lies 80mi. up the river Hoogly from the sea. Calcutta proper has an elected municipal corporation, with 96 members and an income of £2.8 millions; Howrah and the various suburban municipalities have separate boards. The Calcutta Corporation in 1937 decided to give preference in its appointments to qualified candidates who had been political *détenus*. The Port Trust has 20 members, an annual income of over £2,000,000, and a capital debt of £18.7 millions. (ME.)

**Calendar of Events, 1937:** see pages 1-14.

**California,** Pacific coast State of the United States, and thirty-first State to enter the Union (Sept. 9, 1850), is popularly known as "The Golden State"; area, 155,652 sq.mi., population (U.S. census, 1930) 5,677,251; Federal estimate, July 1, 1937, 6,154,000. Capital, Sacramento, 93,750. Cities larger than Sacramento (1930) were: Los Angeles, 1,238,048; San Francisco, 634,394; Oakland, 248,063; San Diego, 147,995; Long Beach, 142,032.

Of the State's population, 4,160,596 were urban, or 73.3%; 5,040,247 whites; 97,456 Japanese; 81,048 negro; 37,361 Chinese; 4,603,287 native born; 1,073,964 foreign born.

**History.**—California showed continued economic improvement during the year 1937, despite frequent and widespread labour disturbances and considerable havoc wrought upon agriculture by floods. Politically there were few significant developments. Dem-



ocrats, controlling the Assembly for the first time in forty years, carried on a campaign to harass Republican Governor Frank F. Merriam, who, with the support of the Republican Senate, effectively blocked most Democratic legislation. The more important legislative acts provided for liberalization of the old-age pension law, substitution of lethal gas for hanging as a means of capital punishment, and institution of a retirement system for judges. A judicial decision of wide interest was the State Supreme Court's denial of Thomas J. Mooney's plea for a writ of habeas corpus; thus Mooney, serving a life sentence for the San Francisco Preparedness Day bombing in 1916, was left no further recourse in the California courts.



FRANK F. MERRIAM, governor of California

In a special election, held in May, Albert J. Elliott, a Roosevelt adherent, was elected to succeed the late Henry Stubbs of Santa Maria as representative of the tenth Congressional District. An important development in municipal politics was the election of Frank L. Shaw to the Los Angeles mayoralty. Dwarfing these events in Statewide interest was the year-long San Francisco graft investigation, which resulted in the resignation of all members of the police commission and the ousting of many police officers. In State politics, Democrats and Republicans strove to consolidate their ranks for the Nov. 1938 elections, when the governorship and the office of U.S. Senator William Gibbs McAdoo will be at stake. Governor Merriam drew sharp criticism for having allegedly dictated the choice of Captain Clyde J. Plummer of Los Angeles as successor to the late Warden Clarence A. Larkin of Folsom prison, killed in an attempted prison break Sept. 19.

Extreme labour unrest, sometimes erupting into violence, severely handicapped California industry. Major strikes crippled the maritime and canning industries, and the nationwide conflict between the American Federation of Labor and the Committee for Industrial Organization had violent repercussions in California labour politics. Most protracted and costly 1937 labour disturbance was the strike of 40,000 San Francisco maritime workers, officially terminated February 5, after having tied up shipping for 98 days. Strife in the canning industry, marked in May by violence and bloodshed when Stockton canners attempted to reopen strike-bound plants, was apparently satisfactorily ended in November by an agreement involving 96 canneries and unions representing 70,000 workers. Important strikes also affected San Francisco hotels, the motion picture and automobile industries, and Southern California aircraft factories.

Interneine conflicts featured California labour developments during the latter half of the year. The most notable inter-union controversy was that between the Pacific Coast International Longshoremen's Association (a C.I.O. adherent) and the Teamsters' Union (an A.F. of L. affiliate) concerning jurisdiction over warehousemen. Both President William Green of the A.F. of L. and John L. Lewis, C.I.O. leader, actively intervened in this dispute, which affected the entire Pacific coast, although centring in San Francisco, where, in September, it threatened once more to paralyze shipping. Expulsion of C.I.O. delegates from the State Federation of Labor convention at Long Beach in September and similar purges in municipal labour councils still further reflected the national labour rift.

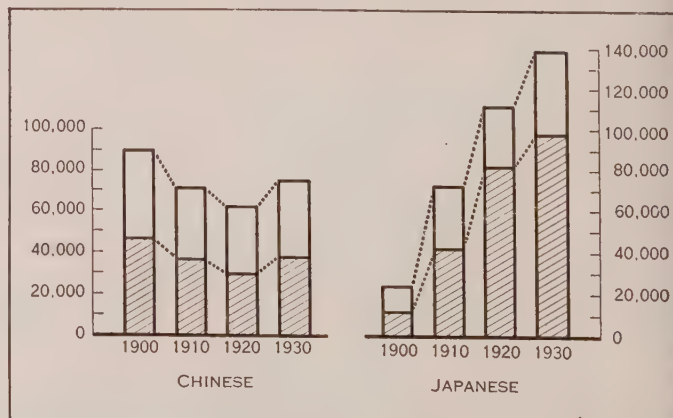
In sharp contrast to the pessimistic labour outlook was the progress made on various public projects. The Golden Gate bridge, containing the longest single span in the world (4,200ft.), was opened to traffic May 27 and 28. Building construction went ahead rapidly on the man-made island site for San Francisco's Golden Gate International Exposition, to be held in 1939. Actual work was begun in October on the \$170,000,000 Central Valley Project, a vast plan for conserving and utilizing water resources of the Sacramento and San Joaquin rivers. (See also BRIDGES.)

**Education.**—In education, California maintained its high position. The University of California continued to be rated with Harvard and Columbia as one of the country's leading universities. Attaining a record enrolment of 22,955 for the 1937 fall semester, the University will receive more than \$15,000,000 from the State in 1937-39. The well-developed public school system buttressing the university was allotted more than \$72,000,000.

**Charities.**—Relief problems were substantially increased in 1937, especially in Southern California and the San Joaquin valley, by the influx of unemployed from other States. The 1937 legislature appropriated \$48,000,000 for unemployment relief, and, in the first eleven months of 1937, the State Department of Social Welfare distributed nearly \$34,000,000 to needy aged and blind, and to needy children.

**Finance and Banking.**—California's budget for 1937-39, largest in the State's history, totalled \$531,847,391, including special appropriations and Federal contributions. Estimated income exceeds this figure by nearly \$14,000,000, however, and increasing revenues, resulting from improved business conditions rather than higher tax rates, were expected rapidly to wipe out the deficit of \$17,756,801 as of June 30. Bank debits for 1937 were estimated at \$29,200,000,000, nearly \$2,000,000,000 greater than in 1936. On June 30, 1936 there were 267 banks (145 State, 122 national) with a capital of \$216,511,000, deposits of \$3,814,794,000, and total resources of \$4,282,460,000.

**Agriculture, Manufactures.**—The year 1937 was one of general business prosperity. Production reached approximately \$2,300,000,000 as compared with \$2,133,000,000 in 1936 and \$1,362,000,000 in 1933. Of this, manufacturing contributed approximately 43.5% (value added), agriculture 29.3%, mining 16.1%, motion pictures 7.8% (cost of production), lumbering 2.3%, and fisheries 1.0%. A minimum of rural labour disturbances, higher prices, and increased sales boosted the farm income to \$660,232,000, a 7% increase over 1936. Manufacturing, accelerating rapidly during the first three quarters of 1937 but slackening during the last quarter, showed increases of 7% in employment and 18% in total payroll. Foreign trade increased sharply in 1937. Exports for the first ten months reached \$229,289,950



CHINESE AND JAPANESE POPULATION in the United States, showing number in California (lower part of each column) and number in the rest of the country (upper part)



(compared to \$176,227,591 in 1936); imports aggregated \$148,531,303 (compared to \$131,116,035 in 1936).

In sports California continued outstanding. The State was foremost in developing major league ballplayers, of whom Joe DiMaggio was the leading example. Donald Budge was the country's top-ranking tennis player. In football, the University of California team, one of the strongest in the country, won the Pacific Coast Conference title and defeated Alabama in the Pasadena Rose Bowl on New Year's Day, 1938.

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(C. E. CH.; R. H. SH.)

## California, University of.

The State university of California with its main headquarters at Berkeley, San Francisco and Los Angeles, had the largest full-time enrolment of any United States college at the opening of the year 1937-38. Its 22,955 students were supplemented by 3,968 part-time students, while its staff of 1,813 ranked fourth in the country behind Columbia, Harvard and New York universities. There were approximately 1,300,000 volumes in its library, placing it fourth after Harvard, Yale and Columbia. Its endowment stood at \$26,834,827 with cash gifts for the fiscal year 1936-37 valued at \$732,266. Leading events of 1937 were the discovery of bones of an early California race by university anthropologists and the gift of a ship originally costing \$150,000 to replace the vessel of the Scripps Institution of Oceanography lost by fire in November.

The president of the university was Robert G. Sproul, while the regents (8 ex officio and 16 appointive) were headed by Governor Frank F. Merriam.

**Cambodia:** see FRENCH INDO-CHINA.

## Cambridge University.

The numbers of junior students in residence in the Eastern term of 1937 were nearly as before: about 5,400 men and 500 women. The men who matriculated in the Michaelmas term of 1936 numbered 1,706; not quite so many as in some years of the decade, but more than half as many again as in the last Michaelmas term before the War. The Ph.D. was conferred in 1936-37 upon 76 persons, a considerable advance upon any year since the institution of primary degrees for research. Two new chairs, of Comparative Philology and Mediaeval History, were established and filled during the year. Being both on the Arts side, they help to redress the balance between Arts and Science, which recent creations of scientific professorships have tended to disturb.

The busiest years of building and rebuilding are over; but work on a new home for anatomy proceeds; a mathematical laboratory is to be built as an abode for calculating machines of wide application and great precision; and the Pitt press building, fully restored to its proper use, has been repaired, to the great benefit of its façade.

The Fitzwilliam museum continues to receive valuable accessions. Its eminent director, Sir Sydney Cockerell, retired, however, at Michaelmas, after a long tenure of office, in which the fame of the museum rose high.

Of the losses due to death during the year, it must suffice to mention the gravest. After Clerk Maxwell, Rayleigh, Thomson, to be the fourth Professor of Experimental Physics was an arduous task, but Ernest Rutherford (Baron Rutherford of Nelson) did not fail. He died in the fullness of his powers, while he had it in him to add yet greater lustre to the Cavendish laboratory over which he had presided since the War.

(E. HAR.)

## Cameroons.

This former German colony is administered partly under a British and partly under a French mandate.

The British Mandate comprises a strip of territory extending north-east along the eastern frontier of the Protectorate of Nigeria from the Bight of Biafra to Lake Chad. Area, 34,081 sq.mi.; pop. (est. 1936), African 825,234, European 382. The mandate is administered as part of Nigeria (*q.v.*), and all Nigerian ordinances apply. The main product is cocoa, other exports being palm-oil and kernels, rubber and bananas; chief port, Tiko. Total imports (1936), £242,588; exports £445,459. Revenue (1935-36) £184,771; expenditure £233,178.

The French Mandate comprises the greater part of the former German colony. Area, 166,490 sq.mi.; pop. 2,192,000. The territory has administrative and financial autonomy. Yaoundé is the capital, and the chief port, Duala. In 1936 there were 2,950 mi. of road, 318 mi. of railway and 1,150 mi. of telegraph. It produces ground-nuts, palm-oil, almonds and hides. Imports (1936) frs. 87,800,000; exports frs. 94,200,000.

## Camp Fire Girls.

The year of 1937 marked the Silver Jubilee of Camp Fire Girls. It was a year of reminiscence, stock taking, and comparison. Since it is estimated that more than 2,000,000 girls have been members of the organization in the United States, Great Britain, and other countries since its inception, the theme "Then and Now" was used at many local celebrations commemorating the Silver Jubilee. A founders' luncheon, held at the Waldorf-Astoria in New York honoured the group of educators who were responsible for the original program.

Particularly colourful and interesting were the "Then and Now" camping pageants held at the 122 Camp Fire camps. Camp Fire Girls was a pioneer in the promotion of camping for girls. In 1911 very few girls had had the advantage of a camping experience. In 1937, 20,600 girls camped in well equipped and excellently staffed Camp Fire camps. Another highlight of the year was the launching of the new *Book of the Camp Fire Girls*.

The experience of the Guardians (leaders of Camp Fire groups), the reaction of the girls, and the advice of specialists were all taken into consideration in this revision of the Camp Fire Girls' manual, which was several years in preparation.



CAMP FIRE GIRLS, using dolls, learn how to bathe a baby



Printed late in December 1936, it was formally introduced by Mrs. Franklin D. Roosevelt, wife of the president of the United States, who is chairman of the Advisory Council of the Camp Fire Girls organization.

A new manual for the Blue Birds, the junior organization of Camp Fire Girls, was edited for publication early in 1938. During the year the usual activities in the seven crafts: home, hand, and health craft, camping, nature lore, business, and citizenship, were enjoyed by the Camp Fire Girls. In Great Britain, Her Highness, Princess Marie Louise, honoured the Camp Fire Girls by becoming a patron; Lady Hearn, widow of the late Sir Walter Hearn, became president; and His Excellency, the American Ambassador to London, the Honourable Robert W. Bingham, became vice-president.

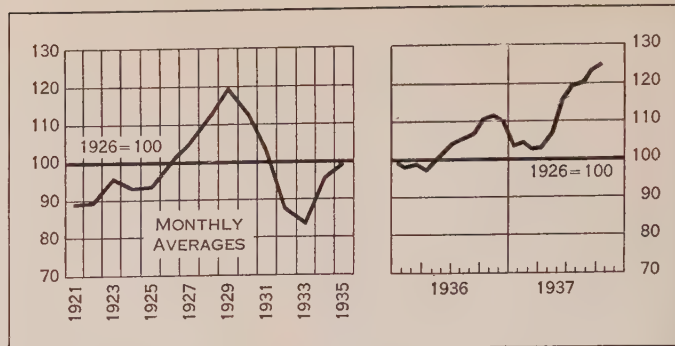
(C. F. Lo.)

**Canada.** The year 1937 may be described for Canada as one in general of further industrial advance out of the depression that reached its lowest point in the spring of 1933. Salient features of this economic recovery are seen in the increase of industrial production, export trade, and mining output. During the first eight months, the index of physical production averaged only about 6% below that of 1929, the most active year in Canadian business. Expressed as a percentage of the base year of 1926, this index averaged for the first eight months 121.6 as compared with 129.1 for the same period in 1929. For the month of October the index for business operation stood at its highest since 1929 (127.4). Canadian export trade for the first seven months of the year showed an increase of \$113,302,000, giving a total of \$617,009,774, the highest since 1930, placing Canada in the fifth rank in world trade. The favourable trade balance for the year ending July 31, was \$403,961,000 as compared with \$299,753,000 for 1936 and \$241,854,000 for 1935. In mining output, the production of gold, despite the "gold scare," was higher than in 1936, the production for October reaching a new high monthly figure for all time of 363,908 ounces. To June 1 copper production was 18% higher than for the same period of the preceding year, nickel 35%, and asbestos 65%. The estimate for the total mineral production for 1937 (\$435,000,000) shows an increase over that for 1936 of \$360,340,000, the highest on record. There has been a marked expansion in the iron and steel industry, and the construction trades, though still far behind the 1929 level, showed gains of 25% over last year. An encouraging feature was the increase in carloadings despite the decline in grain movement.

For the first seven months of the fiscal year, income tax collections amounted to \$99,202,556 as compared to \$84,072,599 for the same period a year ago. Customs and excise revenue for the first six months rose to \$159,872,000, an increase of \$31,394,000; total ordinary revenue increased from \$233,462,999 to \$280,919,554. Gross dividends for the first ten months were \$219,600,000, an increase of \$41,300,000 over the same period for 1936; bond interests showed an increase of 4.7% over 1936. In the twelve months ending September 1937, combined assets of the chartered banks increased by \$135,000,000 to \$3,340,000,000.

Employment has been steadily increasing in all but the prairie provinces, the situation being especially acute in Saskatchewan. Relief rolls have been reduced by 600,000 since April 1936, and now stand at 900,000 persons. The general index of employment, as tabulated in the Bank of Nova Scotia survey for October 1937, shows a distinct advance in the figures of the year before, although it does not mean that the situation is as favourable as at the time of the 1929 level, as the number of those seeking employment has increased considerably.

**Disturbing Elements.**—One or two disturbing elements in this forward trend are seen in the fall in value of base metals; in an



**EMPLOYMENT IN CANADA:** Index as of first of month, adjusted for seasonal variation. Compiled by Dominion Bureau of Statistics from reports from representative establishments, including construction and maintenance, manufacturing, mining, service, trade, and transportation

apparent over-production of newsprint; and in the falling off of outside markets for lumber, owing partly to the increased shipping rates. The severe depression in the stock market since August has been a decided set-back.

The gross Dominion, provincial and municipal debt of \$7,039,091,538 for the year ending July 31 is a heavy burden upon the country: the railway situation, the maintenance of two duplicate lines across the country, one private, one public, though slightly improved over last year is still a very serious problem. The number of immigrants allowed into the country to settle is still very small, totalling only about 9,000 for the six months ending September 30, an increase of but 2,000 over 1936.

Moreover, the general improvement in industry and employment has not been felt in all parts of Canada. The most discouraging feature of the situation was the continuance in Western Canada to a great extent of the drought and unfavourable conditions which seem to threaten the very existence of wheat-growing over large sections of the prairies. This was particularly the case in Saskatchewan. The total wheat crop of the prairie provinces was 181,000,000bu., as compared with last year's short crop of 212,000,000bu., the smallest since 1914. This gives an average yield of 6.7bu. an acre, the lowest on record, as compared to 15.7 for 1928-32 and 10.4 for the drought years of 1932-36.

In Saskatchewan, which has 57% of the total wheat acreage in the west, the wheat crop was a complete failure except in one or two small areas. The yield for the province was only 2.5bu. to the acre. Heavy losses were also suffered in feed, grain, and fodder, owing to the severe rains in the spring and the summer drought. About 250,000 cattle were moved from the dry belt. Farm income in Saskatchewan is therefore very low with the consequence that 500,000 people, more than half the population, will be in receipt of relief this winter.

A large part of the wheat crop of Eastern Alberta entirely failed but in the other sections of the province the crop was large enough to bring the average yield up to 10bu. an acre. In Manitoba, on the other hand, the situation was decidedly improved over that of previous years. The wheat crop of 53,000,000bu., 18.5bu. an acre, was larger than the bumper harvest of 1928. Hence in Manitoba the farm income is high, with a good crop commanding the highest prices obtained for a decade. No. 1 Manitoba Northern wheat, which sold in 1926 at \$1.50, reached \$1.36 in 1937 as compared with \$1.06 in 1936. This increase in

**Recent Fluctuations of Employment in the Dominion as a Whole**

	Oct. 1, 1937	Sept. 1, 1937	Aug. 1, 1937	July 1, 1937	Oct. 1, 1936
In All Industries . .	117.2	115.7	111.9	111.0	102.0
In Manufacturing . .	113.8	111.2	110.6	109.5	101.7
In Bldg. Construction .	75.3	67.6	62.1	60.6	52.7

The indices shown are corrected for seasonal variation and placed on base 100—the monthly average of the period 1925-1929. Figures are from the original index published by the Dominion Bureau of Statistics.



price will make the total income from the western wheat harvest for 1937 almost as great as that of the year before, but less evenly distributed.

**Finance.** — The economic situation of the Dominion was reflected in the legislation of both the Federal and provincial Governments. The Dominion budget for 1937-38, as presented by the Hon. Mr. Charles Dunning, minister of finance, estimated expenditures at \$520,000,000, revenues at \$485,000,000, leaving a deficit of \$35,000,000 as compared with the deficit for 1936-37 of \$87,395,000, and \$159,989,000 for 1935-36. There was no reduction in taxes, and no new taxes were added. Hope was held of balancing the budget within two years. On Oct. 31, 1937, the Dominion Treasury reported a seven months' surplus amounting to \$33,372,600. At the same date a year before, there was an apparent deficit of \$64,003,380, so the improvement for this seven-month period totals about \$100,000,000.

Manitoba and Saskatchewan were in the most severe financial straits: in Ontario, Mr. Hepburn showed a surplus for the fiscal year of \$9,313,938.54, and a reduction of \$33,098,165.39 in the gross debt of the province during the year. Legislation for relief, both Federal and provincial, sought to curtail assistance in direct form. Ontario appropriated \$14,000,000 for highway improvement, which cut down to a great extent the number of the unemployed within the province. The Federal Government in co-operation with the provinces took measures to assist in the establishment of work for unemployed young people. Dominion-provincial agreements were formed to provide for single homeless men upon farms throughout the Dominion. The Home Improvement Plan was continued for 1937. In November the Canadian prime minister, Mr. Mackenzie King, asked the provinces whether an amendment to the British North American Act to permit Federal control of unemployment would be acceptable but met with objections from Quebec, New Brunswick, and Alberta.

In Alberta the legislation of the province followed (as described elsewhere: *see* under ALBERTA; ABERHART) the acute phases of the Social Credit crisis. The close of the year witnessed a situation in which the provincial legislation reducing or cancelling public and private debts awaited final settlement. Meantime the province, at the end of November 1937, had defaulted to the extent of over \$6,000,000.

In the special session of the provincial assembly in August, proposed legislation for licensing banks and financial houses and their employees, and an Alberta Press Control bill to give the province wide restrictive powers, together with a bill to control credit, were refused assent by the lieutenant-governor (who holds office as a Dominion official) and later declared *ultra vires* by the Supreme Court at Ottawa.

This whole matter is still pending, no final decision being possible short of the Privy Council.

**The Rowell Commission.**—An event of importance was the appointment in August of a royal commission of five, with Mr. N. W. Rowell, chief justice of Ontario, as chairman, to investigate the economic and financial basis of the constitution in the light of economic and social developments of the last ten years, which may lead to the revision of the British North American



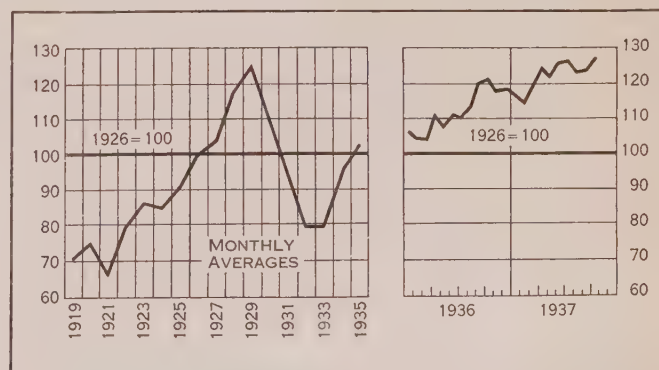
PREMIER WILLIAM ABERHART of Alberta, author of a social credit experiment

Act. A group of expert economists, headed by Dr. W. A. Mackintosh of Queen's university, was named as research staff for the commission. The commission is to visit each province and to hold sittings to hear the proposals of the various Governments as to the conditions within the provinces. By Dec. 15, 1937, the Rowell Commission had sat at Winnipeg and Regina. In Manitoba it was claimed by the provincial Government that unless help was given the province it would be forced to default. It was proposed that the Dominion Government cancel its relief loans (about \$22,000,000) to the province and capitalize at 3½% the annual provincial subsidies, which would mean the assumption of \$52,000,000 of the provincial debt. The rest of the provincial debt would be refunded at 3½% with the co-operation of the Dominion. It was stated that at present the tax rate is 40% higher in proportion to the income than the average of the provinces. The population of the province is 6.75% of the Dominion and the national wealth since 1928 has been but 5%. The Government of Saskatchewan in its official brief suggested subsidies, new taxes, tariff reductions and a shift to the Dominion of social services and debt burdens.

Other developments of interest were the adoption of the plans for a Trans-Canadian Air Line which began operation on September 1. Mr. S. J. Hungerford, president of the Canadian National Railway was appointed president. Fifty-one per cent of the stock was given to the Canadian National, private companies being allowed to participate in the ownership of the remainder but "profits to be strictly limited." A large part of the national defence budget of \$34,999,871 (an increase of \$7,205,570 over that of 1936) was for the building of aeroplanes, landing grounds, etc.

**Canada and the Empire.**—The relations of Canada within the Empire were those of continued harmony and goodwill which contrasted with the somewhat anxious situation at home. In the spring a new Anglo-Canadian trade agreement was drawn up to go into effect September 1. This replaces the agreement drawn up at the time of the Imperial Conference in Ottawa (1932), tending toward freer and more open trade and providing for a large number of reductions in the Canadian customs tariff under the British preference, while Canadian exports are guaranteed preferences or free entry covering an extensive list of foodstuffs and manufactured commodities.

The coronation of May 12 was attended by a large number of Canadians. Among those officially representing Canada were Mr. Mackenzie King, the prime minister; the Hon. Vincent Massey; Rt. Hon. R. B. Bennett; Hon. Charles Dunning; Hon. Ian MacKenzie; Hon. Raoul Dandurand; and a military contingent of 334 of all ranks. The Imperial Conference of 1937, opening in London two days later, was attended by a Canadian delegation headed by the prime minister. Till the end of the year nothing

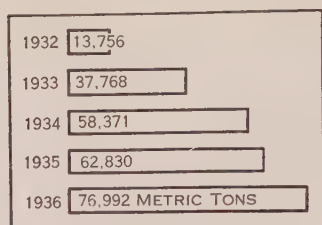


PHYSICAL VOLUME OF BUSINESS in Canada: combined index of industrial production, distribution, and agricultural marketings. Compiled by Dominion Bureau of Statistics



had been officially announced as to the proceedings of the Conference except mere generalities.

Senator Raoul Dandurand was appointed head of the Assembly of the League of Nations. He later attended the Nine-Power Conference of the Sino-Japanese conflict. Trade pacts with Australia and New Zealand were renewed and a new one made with Guatemala. An important trade agreement was made with Belgium, Canada's third best customer for 1936 with a trade of \$30,000,000, a figure expected to double during 1937.



NICKEL PRODUCED in Canada, source in recent years of more than 80% of the world's supply

**United States and Canada.**—Relations with the United States continued on the footing of assured goodwill. In July 1936 President Roosevelt visited Ottawa. In the following March the Governor-General of Canada and Lady Tweedsmuir visited Washington. President Roosevelt included a visit to Victoria, B.C., in his western tour in October, and the American secretary of State, Mr. Cordell Hull, made a two weeks' "goodwill tour" during the same month to Ottawa and Toronto, where he received an honorary degree from the provincial university.

The tourist trade between the two countries was the heaviest yet known. Canada has begun to realize the wealth of this trade and to capitalize on it, especially in the maritime provinces. Roads have been improved and made more accessible for the tourist; various booklets have been published and press bureaus established at the cost of millions of dollars. It is estimated that in 1936 about \$10,000,000 was spent by U.S. tourists in the maritimes, a considerable increase over previous years. It is also estimated for 1936 that the expenditure of American tourists in Canada exceeded those of Canadian tourists abroad by about \$170,500,000 (\$247,000,000 spent by visiting Americans as against \$76,523,000 spent by Canadians in the United States). Although figures for 1937 are not complete, an increase of almost a million tourists was recorded during the first half of the year, when 6,374,339 visitors entered Canada from the United States as compared with 5,409,331 for the same period of 1936.

Trade with the United States, stimulated by the reciprocal treaty of Nov. 15, 1935, showed an increase. Comparing the years ending August 1936 and 1937, imports from the United States rose from \$340,004,000 to \$453,816,000; domestic exports from Canada to the United States from \$383,563,000 to \$481,158,000. A new trilateral trade pact is under discussion as between England, Canada, and the United States. This, however, can scarcely assume final form until well into the year 1938. It is generally understood that Canada will give up several valuable exclusive concessions in the British market in order that American producers may share them. The Dominion will receive in return trading concessions with the United States market.

**Politics.**—The Dominion Government continued under the administration of the Liberal Party under the leadership of Mr. Mackenzie King as prime minister, elected to power Oct. 14, 1935. The political changes of administrations and parliaments in the nine provinces are duly chronicled in their respective places (*see under ALBERTA, etc.*). But for comparison's sake it can be noted here that general elections were held in three of the nine provinces in 1937. In June the liberals in British Columbia under Premier Pattullo were returned to power by a large majority (31 out of 48 seats). In a Federal by-election in Victoria in December another seat was gained by the liberals. In the election in Nova Scotia on June 29 the liberal premier, Mr. Angus Macdonald, was re-elected (the party winning 25 of the

30 seats). In Ontario on October 6 the liberals were returned to power with Mr. Hepburn as premier for a second term. The Ontario contest excited wide interest throughout the Dominion as reflecting in part the newest phase of the labour movement in the conflict between craft unions of the older type and the new industrial unions, and the question of the political significance of the latter type. With the new organization had appeared the newer methods of sit-down strikes, etc. Mr. Hepburn's victory at the polls was very widely held to represent a public disapproval of the new unionism. In April there had been an outbreak of sit-down strikes in the province, by far the most significant one a sixteen-day strike at the General Motors plant at Oshawa. Mr. Hepburn's insistence on getting rid of the United States union representative of the C.I.O. and refusing to put the strikers on relief, led to the resignation of the Hon. Mr. Croll, minister of welfare, and the Hon. Mr. Roebuck, attorney-general. It also determined Mr. Hepburn to call an election for the fall, well before the end of his term.

In November Mr. Albert Matthews was appointed lieutenant governor of Ontario to succeed the Hon. Dr. H. A. Bruce whose five-year term of office expired in October. The Government decided at the same time to abandon the institution of a Government House, hitherto placed by the province at the disposal of the lieutenant-governor.

Events in the world of art and letters were the various regional drama festivals and the Dominion festival held at Ottawa in March. In November national book fairs were held in Toronto, in Montreal, and elsewhere. Canadian Poetry Night was celebrated in Toronto November 24. Mr. Emile Brunet of Montreal was awarded the *Grand Prix* at the Paris Exposition for his relief work. Dr. E. W. Archibald was named Doctor of Medicine, *honoris causa*, by the University of Paris. The annual historical art exhibition of the National Gallery took the form of a one-man exhibition of the work of the late James Wilson Morrice.

In educational matters an important event was the appointment of Dr. Lewis Douglas, of Arizona, well known in the United States as member of Congress and director of the budget (1933-34), to be principal of McGill university.

In 1937 death gathered its annual toll including among those eminent in Canadian life (in January), Brother André, Prof. Edmund Broadus; (in February) Dr. Francis A. Scrimger, Maj.-Gen. Sir Frederick Loomis, Senator Patrick Burns; (in March) Hon. P. C. H. Primrose; (in June) Brig.-Gen. C. A. Smart, Sir Robert Borden, Rt. Hon. Sir William Lloyd; (in July) Sir Charles Saunders; (in September) Senator Rodolphe Lemieux; (in October) Sir Thrasher Cook; (in November) Rev. Dr. Charles W. Gordon ("Ralph Connor"), Hon. Dr. Simon F. Tormie; (in December) Sir Andrew Taylor, and Sir Douglas Hazen, chief justice of New Brunswick. (*See also DUST STORMS; WATER POWER.*)

(S. LEA.)

**Canada, United Church of:** *see UNITED CHURCH OF CANADA.*  
**Canadian Banking:** *see BANKING: Canada.*

**Canadian Literature.** Of literature in Canada in 1937 there is more than usual to be said, chiefly because literature has been saying more than usual for itself—through a new "loud speaker" called the Book Fair. Two such exhibitions were held in November by the Association of Canadian Bookmen, an alliance of publishers and booksellers with authors and librarians. The Canadian publishers' business is chiefly that of selling books published in the United States and Great Britain; but a large space was set apart for Canadian books, arranged by the Canadian Authors' Association. The number, variety, and quality of these native books astonished readers



still under the impression that all books of great literary value and interest must originate in other lands. The new literature produced in Canada during the year showed at least no falling off in spirit or material, with perhaps increased attention to form, especially in the making of verse. If no new star of first magnitude appeared, most of the older stars maintained their rank. Death claimed two, Charles Gordon, whose "Ralph Connor" tales enjoyed enormous popularity for many years, and Annie Charlotte Dalton, M.B.E., outstanding poet, of Vancouver.

The governor-general's two medals, for the best works of fiction and other prose published in Canada in 1936, were awarded respectively to Bertram Brooker of Toronto, for his novel *Think of the Earth*, and the late T. B. Robertson of Winnipeg for his *Newspaper Pieces*. The SERANUS prize for poetry was awarded to Dr. George Herbert Clarke, of Queen's university, Kingston.

(H. A. K.)

**Canals and Inland Waterways.** So many United States canal and waterway projects were completed in 1934 and 1935 (St. Mary's canal, the Louisiana-Texas and Florida East Coast waterways, and Seattle's Lake Washington canal) that 1937 efforts were largely devoted to maintenance. Four current operations, however, were of importance. Dredging to increase to 32ft. the depth of the seven and a half mile Cape Cod canal bought by the Government for \$11,500,000 in 1928 was only 60% complete on June 30, 1937. Deepening of the 19mi. Chesapeake and Delaware canal to 19ft., carried on at a cost of over \$4,000,000, was 94% complete at the end of the fiscal year. A shallow-draft intracoastal waterway to parallel the Atlantic coast and be used primarily by pleasure craft was extended, and the Sabine-Neches waterway of eastern Texas was deepened. In both construction and maintenance projects, emergency relief and public works funds were widely used, less than two of five million dollars of Federal funds spent on the New York State Barge canal coming from regular funds and over ten million dollars of sixteen million spent since 1928 on the Cape Cod canal coming from extraordinary sources.

Recently issued statistics on United States rivers and canals reveal that canal traffic increased during 1936. The New York State Barge canal surpassed its record for the 20th century by carrying 5,014,206 tons valued at \$250,736,636. Other canals carrying over \$50,000,000 of traffic were: St. Clair Flats canal at Detroit, \$865,189,597; St. Mary's Falls canal, \$799,786,656 (of which a little less than 50% was purely domestic traffic); Houston Ship canal, \$619,326,957; Port Arthur canal, \$449,265,465; Sabine-Neches waterway, \$256,913,443; Cape Cod canal, \$157,022,288; New Orleans Navigation canal, \$140,461,545; Black Rock canal (Buffalo, N.Y.), \$96,394,910; and Chesapeake and Delaware canal, \$61,975,342. Total canal and waterway traffic for 1936 reached 150,760,328 tons valued at \$2,397,610,023. For statistics regarding the Panama canal, see PANAMA CANAL AND CANAL ZONE.

(X.)

**Great Britain.**—The canal industry in Great Britain has been under a cloud for so long and the prospects of its resuscitation continue to be so disheartening that there is very little to record in the way of actual development and expansion during 1937. Following the energetic enterprise which led to the amalgamation of eight separate undertakings under the control of the Grand Union Canal Company with the carrying out of an important program of improvements, including the 51 new locks on the Warwick section of the canal, completed in 1934, combined with the improvement by the Trent Navigation of the section of the river between Newark and Nottingham, where a number of new locks have been constructed during the past 10 years, there has been a lull in activity.

The most notable event of 1937 has been the opening of the Dog-in-a-Doublet lock and sluices in the tidal section of the River Nene, for the purpose of removing a shoal, regrading the riverbed, and improving the channel for navigation. Prior to the carrying out of the improvement, there was an obstruction in the river two miles below Peterborough, due to the existence of the Northey Gravels, which had been of service in the past by acting as a natural weir, keeping back the brackish tidal water and so maintaining a source of fresh water above the shoal for a supply to the town of Thorney. The construction of the weir has enabled the shoal to be dredged without detriment to the Thorney water supply, and the needs of navigation have been further met by the construction of a lock, 145ft. long and 26ft. wide, capable of receiving vessels 133ft. long by 22ft. wide, with a loaded draught of 9ft., while other locks on the river are being reconstructed to receive canal barges, 78ft. long by 14ft. 6in. wide, with a loaded draught of 4ft. 6 inches. The Dog-in-a-Doublet lock is at the extremity of the tidal portion of the River Nene, and the new structure has been designed to meet a tidal variation of about 12ft., with a permanent head of 11ft. on the upstream side of the sluice.

**France.**—In other countries of Europe, there has been considerable activity. Work in France has been carried on under a program approved by the Higher Council of Public Works, which includes dredging operations for widening and deepening the channels of rivers, the removal of awkward bends, the electrification of lock operations machinery and the reduction in the number of weirs. Notably in the first category come the improvements effected in the navigable waterways connecting the Paris basin with the northern coalfields, so as to afford a passage for craft drawing fully 7ft., whereas the previous limit was less than 6 feet. The unit load capacity has thereby been increased from 280 tons to 350 tons. Dredging has also been done on the canal systems of the Marne, the Rhine, and the Rhône. Electrification of lock machinery has been carried out on the Rhine-Rhône canal below Strasbourg, and on the canalized sections of the rivers Oise and Scheld.

**Belgium.**—In Belgium, the Charleroi to Brussels canal has been widened and deepened so as to be able to accommodate 1,350-ton boats, whereas it was originally constructed for craft of 70 tons only. Work is well forward on the Albert canal about 70mi. in length, which is to connect Liège and Antwerp. It has a minimum width of 85ft. (26 metres) and a depth in the centre of 16ft. 6in. (5 metres). It will be able to accommodate Rhine barges of 2,000 tons capacity. The portion of the canal lying between Haccourt and Neerhaeren is already in service.

**Holland.**—In Holland, following the completion of the Juliana canal along the Maas and the Trente canal from Zutphen to Enschede, opened in 1936, the works are in hand estimated to cost over 140 million guilders. These include the canal from Amsterdam to the Rhine, the ameliorations of the river Meuse and the waterway from Groningen to the Ysselmeer (formerly Zuiderzee) and the enlargement of the canal from Amsterdam to Ymuiden.

**Germany.**—In Germany, on the Rhine-Main-Danube system, the first portion of the connection is so far advanced that 1938 should see Würzburg accessible to large craft. Locks are being reconstructed between Frankfort and Aschaffenburg so as to take larger vessels. The last section of the great high-water protection banks extending to and below the town of Stuttgart, associated with the works on the Neckar, is making such progress that during 1938 the main undertaking is expected to be completed. The canalization of the Mid-Weser from Minden to Bremen for craft of 1,000 tons has been systematically pursued, and nearly the whole extent is in hand. In the autumn of 1937, the canalization of the Werra for a length of 100km. from Münden to Wartha was



begun. On the Weser-Elbe section of the Mittelland canal, the Allerbüttel-Sülfeld lock has been completed, so that navigation is possible as far as Neuahaldensleben. By the end of 1938, the Rothensee Lift will in all probability be put into commission.

**Russia.**—Perhaps the most notable event of the year in canal annals was the opening to traffic in May last of the 80-mile waterway known as the Moscow-Volga canal, which connects the inland port of Moscow with the river Volga, and places the former in communication with the Caspian sea, as also through the Marinsk river system and the recently constructed Baltic-White Sea canal, Reva river and Ladoga canal, with the Baltic and White seas. When the Volga is ultimately connected with the river Don, by means of the Volga-Don canal about to be undertaken and expected to be finished by 1942, ships from Moscow will be able to traverse a deep-water route to the Black sea. The Moscow-Volga canal is a remarkable piece of engineering construction, comprising 200 million cubic metres of earthwork excavation, 3 million cubic metres of mass concrete work, and 450,000 cubic metres of reinforced concrete in structures. There are 11 locks to enable a passage to be made over the elevated plateau which begins a few miles from the Volga, and extends for more than 25 mi. along the course of the canal. In conjunction with the canal scheme, the city of Moscow has been provided with a greatly increased supply of drinking water. The river Dnieper has also been much improved for navigation by the removal of a series of rapids. (See also SUEZ CANAL.) (B. CU.)

**Canal Zone:** see PANAMA CANAL AND CANAL ZONE.

**Canary Islands,** group of 13 islands (7 inhabited) in the Atlantic, off the African coast between 28° and 30° N. lat., governed as an integral part of Spain, of which they form two provinces, Las Palmas (capital, Las Palmas, in the island of Gran Canaria) and Santa Cruz de Tenerife (capital, Santa Cruz, in the island of Tenerife). Area, 2,807 sq. mi.; population (1934) 599,712. Tobacco and bananas are grown, and wine and timber produced; there is a considerable fishing industry. Since the outbreak of Gen. Franco's rising in 1936, the islands have been under insurgent control.

**Cancer.** Most striking in 1937 was the work of Peyton Rous of the Rockefeller Institute in which he demonstrates that by inoculating into the ears of rabbits an emulsion from a wart-like growth (studied in rabbits by Shope and proved by him to be infectious) cancer can be obtained by administering shortly after the appearance of the harmless papilloma a moderate quantity of a known carcinogenic coal-tar. Soon after this tar injection extensive and rapidly growing squamous-cell cancers appear in the ears, metastasize early to the other organs of the body and destroy the animal in a few months.

This raises again the much discussed question of the part which viruses may play in the production of tumours both animal and human. Rous was originally responsible for this idea when he discovered that a sarcoma, a malignant tumour of the fowl, could be transferred to other fowls by the use of an extract filtered through a porcelain filter of such density that it held back all ordinary bacteria. Whether this cancer-causing agent was a chemical substance or a living organism Rous was unwilling to say. Later W. E. Gye of London and others felt from their studies that the virus was probably a living creature like the ordinary bacteria.

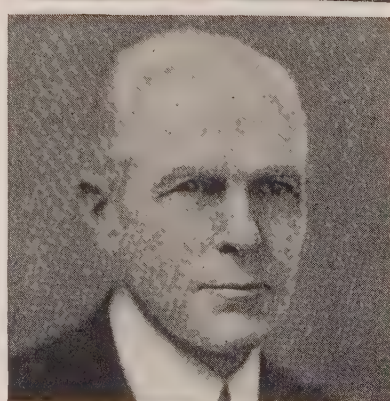
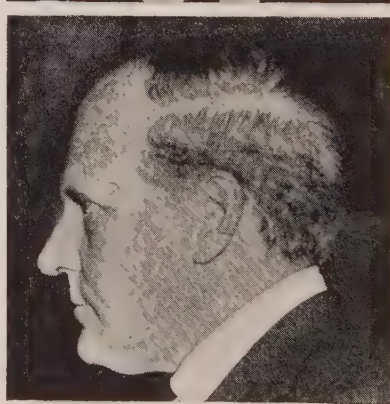
Today the virus question has been entirely transformed by the discovery of W. M. Stanley, R. W. G. Wyckoff and other workers in the field that certain viruses, notably that of the tobacco plant, possess some of the properties of the living organism in that they can multiply, but on the other hand they are crystallizable and

hence are presumably proteins of very large molecular weight, as shown by their sedimentation rate. The whole subject needs much more study and can not be considered as finally settled. The most probable explanation of the action of the combined virus and tar treatment is that the virus in some way starts the growth of the epithelial cells to form a papilloma and thus sensitizes the cells to the action of the tar, for under normal conditions tar-painting is not a very effective method of producing cancer in rabbits, most of the growths described being mere papillomata.

The extraordinary discovery in the past few years of rather simple chemical substances which produce cancer in large numbers in animals has been extended both in London under E. L. Kennaway, J. W. Cook and their colleagues and at Harvard University in Boston by L. F. Fieser and his collaborators. These carcinogenic substances have been used to confirm the work of F. D. Bullock, M. R. Curtis and W. F. Dunning on their somatic mutation theory governing the production of cancer; they have been employed in obtaining a large number of interesting types of tumours now including those from almost all the organs of the body in animals, and in connection with their effect in producing oes-trus in animals.

**Intricate chemical**

Cancer specialists (top to bottom): DR. MAUD SLYE of the University of Chicago; DR. FRANCIS CARTER WOOD of Columbia University; DR. LOUIS F. FIESER of Harvard University; DR. JAMES BURGARDNER MURPHY of Rockefeller Institute; DR. WARREN HARMON LEWIS of Carnegie Institute





studies are under way to determine just what arrangement of the hydrocarbon molecule produces the carcinogenic effect. This means the production and testing on sensitive animals of a very large number of compounds. In general, those of simpler composition are most effective. Investigations are under way to find whether any of these compounds are present in the bodies of those with developing cancer, whether or not they may be present in food, may be developed by cooking, and a host of similar aspects. E. C. Dodds and his collaborators at the Middlesex hospital, London, have chosen to work in this field and a large series of compounds have been discovered capable of producing oestrus or heat and of inducing mating in animals. Some of these are not related to the carcinogenic hydrocarbons, for instance, two known as diphenylethylene and triphenylethylene are highly potent.

In other fields there has also been great activity. For example, the production of large quantities of neutrons in an apparatus known as the cyclotron developed by Ernest O. Lawrence at the University of California has permitted the investigation of the biological effects of these uncharged particles and according to experiments so far conducted, these neutrons seem to be more effective in the destruction of cancer than their charged relatives, the electrons, which are the present basis for the treatment of cancer by X-ray and radium. In addition Lawrence has been able to produce a large amount of artificial radioactive substances, among them a form of common salt which gives off powerful radiations but loses its strength very rapidly, falling to one-half in about 14 hours. This suggests the possibility of injecting the salt into a tumour because it is not poisonous, except for its capacity to radiate.

Other compounds, such as radioactive vanadium, have also been produced which have a longer life and therefore may to a certain extent replace radium, but these isotopes of a higher atomic weight are much more difficult to produce in quantity and require far greater amounts of energy.

In response to this synthesis of radioactive elements, together with the successful surmounting of engineering difficulties in the production of extremely high voltage X-rays, the price of radium has fallen from \$120,000 per gram to \$25,000 per gram. High voltage X-ray apparatus will probably shortly replace the use of large quantities of radium in the so-called packs, for the X-rays produced at 1,000,000 volts are practically equivalent to radium, are cheaper, give a much deeper penetration into the tissues, permit the treatment of a number of patients at a time, and have certain useful qualities making their development a distinct advance in the treatment of cancer. (See also **RADIOTHERAPY; X-RAY.**) For statistics see **PUBLIC HEALTH SERVICES.**

(F. C. W.)

**Candy:** see **CONFECTIONERY.**

**Cane Sugar:** see **SUGAR: Cane Sugar.**

**Canning Industry.** The outstanding tendency of the canning industry throughout the world during 1937 was improvement in quality. This naturally led to increased co-operation within the industry and with other industries. For this purpose canners' associations were maintained throughout the world. In some countries the officers of these associations had official Government status, and in others Government experiment stations and colleges co-operated in the improvement of canning technology and the production of canning crops.

During the year, the first International Canners Convention was held in Paris, and was attended by representatives of eight of the leading canning countries. The purpose of the convention was the establishment of a permanent international body for

standardizing rules and regulations affecting the canning and labeling of foods. The substitution of corrosion resistant materials in canning equipment for those formerly employed was marked during 1937, and the employment of cold reduced plate has been greatly increased in order to reduce the corrosion of tin plate used in packers' cans.

At the close of the year cold reduced plate constituted approximately 45% of the tin plate used for canned foods, whereas a year earlier it constituted only 30%.

Equipment was developed during the year which is expected to aid in improving the quality of canned foods. For instance, the "Tenderometer" intended to determine the tenderness of raw peas used for canning, and the tubular blancher which provides an improved way of blanching peas, are both designed to improve the quality of that product.

Increased information on the processing of non-acid products was marked by the publication of the third edition of the processing bulletin of the National Canners Association. Development of new types of processing equipment and improved processing procedure was regarded as a marked advance in the art of processing (sterilizing) canned foods.

The pack of the canning industry of the United States during 1937 was the largest on record. For fruits, vegetables, specialties, fish and milk, over 10,000,000,000 cans were used as containers in addition to a large quantity of glass containers. For perishable vegetables alone, the products of over 1,500,000ac. were used for the canning industry.

(W. D. B.)

**Cape Verde Islands,** an archipelago belonging to Portugal, lying off the West African coast, between 17°13' and 14°47' N. and 22°40' and 25°22' W. The total area is 1,557 sq.mi., and the population 153,182, including about 6,000 Europeans. The islands are some 15 in number, and are divided into two groups, in relation to the prevailing north-east wind: Barlavento (windward) and the Sotavento (leeward). The seat of the governor is at Praia. There are over 150 primary schools and a secondary school in São Vicente.

About 100 ships a year call at the islands, and São Vicente is an important coaling station.

Revenue and expenditure for 1937 were estimated at £157,374 and £155,442 respectively.

**Capitulations.** The capitulatory régime, which had existed in Egypt as part of the Ottoman dominions from mediaeval times, giving special immunities and privileges to foreign nationals, came to an end on Oct. 15, 1937. On that date, under the terms of the Convention signed at Montreux on May 8, 1937, between Egypt and the capitulatory Powers (Great Britain, France, Italy, the United States of America, Greece, Belgium, Holland, Denmark, Norway, Sweden, Spain, and Portugal) the consular courts were closed for all judicial business concerning their respective nationals, except matters of personal status. The Convention allowed the capitulatory Powers to opt for the retention of jurisdiction in these last-named matters by their consular courts for the duration of the 12-year transition period for which it was agreed the mixed tribunals would continue to operate.

The Egyptian Government has agreed, for this transition period, to certain safeguards in the matter of discriminatory legislation and the expulsion of foreigners and with regard to the régime to be enjoyed by the educational, religious, medical, and charitable institutions created and administered in Egypt by the various Powers.

(A. Mn.)

**Carnations:** see **HORTICULTURE: Carnations.**



**Carnegie Trusts.** Carnegie Corporation of New York, established by Andrew Carnegie in 1911 and endowed with \$135,000,000, expends its annual income in grants to institutions and agencies whose activities aim at the advancement and diffusion of knowledge and understanding among the people of the United States and of the British Dominions and Colonies. During 1937, the corporation trustees appropriated a total of \$3,500,000 for: library interests, \$500,000; adult education, \$400,000; fine arts and museums, \$500,000; research and publication, \$750,000; general educational purposes in schools, colleges, universities, etc., \$1,500,000. The amount appropriated since 1911 totals \$162,000,000.

The five other Carnegie organizations in the United States, which were founded by Mr. Carnegie for specific purposes before the establishment of the corporation, with endowments now ranging from \$10,000,000 to \$30,000,000, followed their established programs.

**Carnegie Institute of Pittsburgh** (1896), which comprises an institute of technology, a museum of fine arts, a music hall, a museum of natural history, a public library, and a library school, installed Dr. Robert E. Doherty as president of the Carnegie Institute of Technology. The annual international art exhibit at the museum again attracted wide attention.

**Carnegie Institution of Washington** (1902), devoted to scientific research, expended \$1,700,000 in its program of encouraging investigation, research and discovery, and the application of knowledge to the improvement of mankind, specifically by work in astronomy (Mt. Wilson Observatory), terrestrial magnetism, geophysics, animal and plant biology, and historical research (especially in Yucatan).

**Carnegie Hero Fund Commission** (1904), established to recognize heroic acts performed by persons the nature of whose duties in following their regular vocations does not necessarily require them to perform such acts, made 60 awards of medals, or of funds for worthy purposes, in recognition of acts of heroism, thus bringing the total number of awards since 1904 to 2,965, and the total of money grants to \$5,000,000.

**Carnegie Foundation for the Advancement of Teaching** (1905), established to provide retiring pensions for teachers and to advance higher education, paid \$1,875,000 in retiring allowances to retired college professors, or their widows, making a total of \$33,000,000 paid for such purposes since its establishment. It has also continued its program of educational research and study, notably the eight-year study of secondary and higher education in the State of Pennsylvania. (See also UNIVERSITIES AND COLLEGES.)

**Carnegie Endowment for International Peace** (1910), established to serve the purpose indicated by its name, expended \$650,000 in its efforts to further friendly understanding among the nations of the world. The year marked the completion of the great co-operative enterprise, begun in 1914, of the preparation of the economic and social history of the World War, which resulted in the publication of 152 volumes. Continued progress was made also in the study of Canadian-American relations, the findings of which are being reported in 44 volumes. These two activities were made possible by corporation grants to the endowment.

(F. P. K.)

**Great Britain.**—During 1937 the trustees of the Carnegie United Kingdom Trust proceeded with their fifth quinquennial program of educational and social experiment begun in 1936, when several new lines of policy were defined for the period 1936–40. The chief features of the present program are important allocations for land settlement (£150,000); music (£30,000 in grants and guarantees to amateur choral and orchestral societies in affiliation with the National Federation of Music Societies); social

services, including village halls (£25,000); boys', girls', and young farmers' clubs; adult education, covering also an experiment for the 18 age group (£20,000), and museums (£15,000). In addition to assistance for the National Central library (£4,000 a year for five years), and to the Scottish and Irish Central libraries (approximately £2,000 a year each), the total allocation set aside by the Trust for library purposes during the five-year period amounts to £30,000.

In addition to the Carnegie United Kingdom Trust, there exist also in Great Britain: (a) The Carnegie Trust for the Universities of Scotland, whose income of £120,000 a year is divided between bursaries to students and advanced research work; (b) The Carnegie Dunfermline Trust, which conducts a wide range of activities in Dunfermline, Fife; and (c) The Carnegie Hero Fund Trust which disburses a large income (£22,311) in the form of awards to persons for acts of heroism in attempting to save human life.

**Caroline Islands:** see PACIFIC ISLANDS, MANDATED.

**Carter, Mrs. Leslie** (1862–1937), American actress, began her stage career in 1891 as a means of vengeance upon her millionaire husband who had won a divorce on the ground of infidelity. Under the tutelage of David Belasco, she scored her first great success in 1895 in *The Heart of Maryland*, which played in London after three seasons in the United States. Equally successful were *Zaza*, *Madame Du Barry*, and *Adrea* which followed. After 1906 when her second marriage caused a break with Belasco, she appeared in such hits as *Camille*, *The Second Mrs. Tanqueray*, *The Circle*, and *The Shanghai Gesture*. Born in Lexington, Ky., June 10, 1862, Mrs. Carter died in Santa Monica, Cal., Nov. 13, 1937.

**Casein:** see PLASTICS INDUSTRY.

**Catastrophes:** see DISASTERS.

**Cattle.** Large imports of cattle and calves into the U.S. from Canada and Mexico, and violent changes in the price for prime beef animals marked the cattle industry of North America in 1937. Canada shipped 208,552 head of cattle and 98,426 calves to the United States in 1937, compared to 191,149 cattle and 50,541 calves in 1936. Mexican shipments were also large. By June 19 the quota of calves admitted under low tariff duties was filled and by August the cattle quota of 155,799 had been exceeded, so that higher duties were paid on many head of imports. Oct. 1937, saw the highest U.S. price level, \$19.90, for prime grade beef steers since the World War. By the end of the year prices had dropped almost \$8. Contributing to the decline were the decrease in consumer buying power, owing to the business recession, a slight increase in cattle supplies, a seasonal increase in the supplies of poultry, a more than seasonal increase in the slaughter of hogs and a sharp drop in the price of hides. Slaughter of cattle in the United States in 1937 was approximately 10,000,000, compared to 10,972,000 in 1936 and a five-year average of 8,176,000. The slaughter of calves in 1937 was 6,250,000, compared to 6,070,000 and a five-year average of 4,640. Total number of all cattle in the United States Jan. 1, 1938, was 65,930,000. On Jan. 1, 1937, it was 66,448,000. The number of cattle being fattened on Jan. 1, 1938 was about 15% larger than the year previous.

The price structure for cattle in Canada during 1937 was dictated by conditions in the United States, the Dominion Ministry of Agriculture reported at the end of the year. There was practically no change in the number of cattle on Canadian farms from 1936 to 1937, the number being about 8,840,600. In England and



Wales there was an increase from 6,540,300 to 7,853,307, which may be in some degree owing to the fact that a change in the subsidy granted farmers now provides a premium on extra prime cattle marketed, as against only fairly good grades.

The severest changes the cattle industry suffered in 1937 were probably in South Africa where drought resulted in heavy losses of cattle and crops. The drought covered a large part of the hinterland, the Transvaal, Orange Free State, northern parts of the Cape Province and Natal and was so severe that, to assure meat supply, the Government opened the borders to increasing imports of cattle from Bechuanaland and the Rhodesias.

Drought also affected the cattle industry in France, where, in addition, losses from foot-and-mouth disease were prevalent. In Belgium the herds also suffered from the disease.

Although the United States exported meat in 1937 it imported a much larger quantity, 169,544,188lbs. Of this 94,713,708lbs. were beef and veal. U.S. exports of beef and veal were 12,666,286lbs. (See also LIVESTOCK.) (S. O. R.)

**CCC:** see RELIEF.

**Celebes Islands:** see DUTCH EAST INDIES.

**Cellulose:** see PLASTICS INDUSTRY; RAYON.

**Cement.** Since the product is used largely in the building industry, the cement industry has been seriously affected by the depression decline in building operations, and has shown one of the slowest recoveries found in any phase of the mineral industries. Total cement production in the United States declined from a 1928 high of 178,509,250bbl. to a low of 64,715,171bbl. in 1933, a decline of 64%, and had recovered only to 114,121,810bbl. in 1936, or 64% of the former high. In spite of some recession in the production rate in the second half of 1937, the year's output will show an increase over that of 1936. The great bulk of the output is the ordinary Portland cement; the special types of masonry, natural and puzzolan cements averaged only 1-2% of the total.

Recent technical developments are largely concerned with improved grinding, fuel savings through better combustion conditions, dust collection, and the changes produced in burning the clinker. (See also GYPSUM.) (G. A. Ro.)

**Central America,** the region between Mexico and Colombia, embracing the six republics of Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, and the Panama Canal Zone, and the colony of British Honduras. The area is 215,420 sq.mi.; population (estimate, 1937) 6,900,000. The main population centres are on the highland plateau adjacent to the Pacific, where the population from Costa Rica to Guatemala is white, mestizo, and Indian, tending more and more to pure Indian toward the north. The low Caribbean slope, including British Honduras, is largely negroid. Panama, too, has a large negro element. The total annual foreign trade is about \$120,000,000 in value. Imports are principally foodstuffs, as flour, and textiles and other manufactured goods. Coffee from the Pacific uplands, bananas from the lowlands, some gold and considerable cabinet woods comprise the main exports, except in British Honduras, where chicle and hemp are of considerable consequence. The greater part of the foreign trade is with the United States. In addition to export commodities, corn and beans are extensively grown for domestic consumption. The general trend of Central America was toward political stability and economic betterment in 1937, marred by the uncertainties of the coffee industry. Education and literacy vary from country to country, with Costa Rica the most advanced country, and Honduras the least. (See BRITISH HONDURAS; COSTA RICA;

GUATEMALA; HONDURAS; NICARAGUA; PANAMA; PANAMA CANAL AND CANAL ZONE; SALVADOR, EL.) (L. W. Be.)

**Central Australia.** The name Central Australia was formerly used officially for an oblong area of the Northern Territory lying below latitude 20° S., while the area above was known as North Australia. This division, effected for administrative purposes, March 1927 was, however, repealed by an act of June 12, 1931, and the whole of the area bounded by the 26th parallel of south latitude and the 129th and 138th degrees of east longitude was placed under the Northern Territory.

**Ceramics:** see FELDSPAR; GYPSUM.

**Cereals.** The world planted 571,625,000ac. to cereals and harvested 12,339,437,000bu. of grain, exclusive of rice and exclusive of cereal crops in Russia and China, for which no satisfactory figures are obtainable. This huge harvest, made up of five of the six great cereal crops, consisted of 3,549,016,000bu. (60lbs. to the bushel) of wheat from 250,615,000ac.; 3,385,649,000bu. of corn (56lbs. to the bushel) from 126,002,000ac.; 3,090,492,000bu. of oats (32lbs. to the bushel) from 90,774,000ac.; 1,253,550,000bu. of barley (48lbs. to the bushel) from 58,011,000ac.; 860,730,000bu. of rye (56lbs. to the bushel) from 46,223,000 acres. Russian crops would raise the foregoing considerably, as the reports for 1937 production indicate large yields and the U.S.S.R. is known to have harvested 1,259,000,000bu. of oats, 953,256,000 of wheat and 375,000,000bu. of rye in 1935.

Along with the planting and harvesting of this huge combined crop in 1937 there was also a further growth of laws regulating production, distribution and prices of grains. In France at the beginning of the 1937 harvest the price of wheat was fixed at \$1.72 a bushel, to protect French farmers from imports of lower-priced foreign wheat. In Italy the 1937 tariff on foreign wheat was about 26¢ a bushel. In Germany where there was a scarcity of bread grains, wheat and rye, governmental decree compelled the addition of 7% corn (maize) flour to wheat flour and the types of wheat flour were reduced from eight to one, in which extraction was raised from 75 to 75-80%. Four per cent corn flour was required in all rye flour in August to October, but, with the harvesting of a surplus potato crop, the Government ordered 6% potato flour added to rye flour instead of 4% corn flour which was mainly imported. Japan in 1937 reached the goal of its five-year wheat plan begun in 1932, with a production of 32,700,000bu. of wheat and exceeding 50,000,000bu. in 1937. Tariffs on foreign wheat encouraged Japanese farmers to better varieties and cultural methods, thereby increasing the yield, from land withdrawn from rice, barley and the cultivation of mulberry leaves for silk worms. However, wheat holds a minor place in Japanese diet compared to rice, which Japan now produces to the amount of 85% of consumption requirements. (See also BARLEY, CORN, OATS, RICE, RYE, WHEAT.) (S. O. R.)

**Ceylon.** A British crown colony, lying off the southern extremity of India and approaching within 6° of the equator. The area is 25,332 sq.mi., and the population 5,312,548. The capital, Colombo, has a population of 284,155. Jaffna has 45,708, Galle 38,424, and Kandy 37,147. The governor (Sir Andrew Caldecott since 1937) is assisted by a Board of Ministers, and a State Council of 60, elected by all adult Ceylonese, male and female.

The economics of Ceylon are dominantly agricultural. Coconut palms occupy about 1,100,000ac., and rice 850,000 acres. Rubber in 1936 was planted in 605,000ac., and tea in 558,000ac., the



latter giving employment to 700,000 labourers imported, not under indenture, from India. The total imports into the island in 1936 were valued at £16,100,000, and the total exports at £18,300,000. The imports are multifarious; rice, cotton goods, and oils being most prominent. The exports are mainly tea (£11,500,000) and rubber (£3,500,000). The United Kingdom takes half the exports and provides about one-fifth of the imports. The weights and measures are as in Great Britain; the coinage is in rupees and cents.

**Maldives.**—This is an archipelago about 400 mi. south-west of Ceylon, to which it is nominally a tributary, sending an annual embassy to Colombo. Population 79,281, all Muslims. The sultan resides in Malé, a small island 3 mi. in circumference. The islands are covered with coconut palms; millets and fruit are also cultivated. (See also WATER POWER.) (ME.)

**Chaco,** an undeveloped region in South America (area: about 100,000 sq. mi.) between Bolivia and Paraguay, and claimed by both. A five-year war over its possession was terminated by an armistice in June 1935, and representatives of six other American nations met those of the disputants in a conference at Buenos Aires in an effort to effect a permanent settlement. In May 1937, the two nations were persuaded to resume diplomatic relations, and in August an effort to withdraw Paraguayan troops and create a neutral zone precipitated the overthrow of Paraguay's dictator, President Franco. Continued political instability, in Paraguay especially, precluded further attempts at rapprochement in 1937, although the conference continued its efforts.

**Chain Gangs:** see PRISONS.

**Chain Stores.** In the United States, the significant developments in chain store retailing during 1937 were the efforts of the corporate chain stores: (1) to adjust their public relations and merchandizing methods to an increasing amount of restrictive State and Federal legislation, and (2) to meet the more intensive competition of independent retailers, and especially of the "voluntary chain" and the "super-market."

During the year, Pennsylvania and Tennessee for the first time passed graduated tax levies on the corporate chain. Georgia, Minnesota, North Carolina, South Dakota, and Wisconsin reenacted chain store tax measures. This new State legislation, taken together with the results of the court decisions of the year, brought the number of chain store tax laws in effect to 22.

The most significant judicial set-back to the corporate chain was the 4 to 3 decision of the United States Supreme Court on May 17, validating the Louisiana Chain Store Act, the only act to date that bases a graduated levy upon the number of stores operated anywhere in the United States rather than upon the number within the enacting State. Also disappointing to the corporate chain was the decision of the Texas Supreme Court on Dec. 1, which upheld the Texas Chain Store Act and its top annual tax rate of \$750 per store, higher by \$200 than any other effective State levy.

The attempts of the Federal Trade Commission during the year to enforce the Robinson-Patman Act and its prohibitions on the diversion of "brokerage" and on "unfair" discounts and allowances have operated to spread out large-scale buying advantages more evenly among corporate chains and independents. Moreover, the Miller-Tydings resale price maintenance enabling amendment to the Sherman Anti-Trust Act, approved on Aug. 17, has influenced the independent merchant to become more vocal in demanding that manufacturers of branded merchandise use the several State permissive fair trade acts, now numbering 42, to

establish minimum resale prices.

These legislative developments do not necessarily mean the destruction of all corporate chains nor even a sudden check on their progress. Chain store taxes fall lightly on a corporate chain that operates a limited number of units and thereby keeps out of the high State tax brackets. Chain taxes mean less to a corporate drug chain than to a corporate grocery chain for the volume per store and the net profit are considerably greater in the former case. A chain tax burden may be unequal as between two chains in the same field if one operates small stores and the other an equal number of large stores. Moreover, State and municipal taxation, initially directed at the corporate chain, may develop into revenue proposals to be applied universally to retailing. Already the Georgia State Revenue Department has ruled that the Georgia Chain Store Act applies to "voluntary chains" as well as to corporate chains. The Robinson-Patman Act also affects the independent and the "voluntary chain." Many of the "special discounts" formerly received by the corporate chains were similarly granted to the "independent" and to the "voluntary." Furthermore, in England, where price maintenance has prevailed for a very long time, the corporate chains or "multiple shops" have made consistent progress.

Other important matters of concern to the corporate chain during 1937 were the activities and growing stability of the "voluntary" chain in the food field, the spread of the "voluntary" idea into other fields, the growth of the "super-market" (it is estimated that at least 1,000 new, full-fledged "supers" were established in 1937—many by the corporate chains themselves), and the threat of more powerful and militant unions in chain store retailing.

Those corporate chains that apparently have determined to preserve their corporate structures attempted to meet these restrictive influences during the year, in the main, by:

- (1) Weeding out unprofitable units and reducing the number of "neighbourhood" locations.
- (2) Developing different types of super-market operations involving:
  - (a) A concentration into larger stores often located where land is cheap or rentals are low but where ample parking space is available.
  - (b) Operation, wholly or partially, on a serve yourself, cash and carry basis.
- (3) Expanding chain owned or controlled manufacturing, processing, and packaging departments.
- (4) Experimenting with "Point of Sale" advertising programs offered to suppliers on a standardized basis and with the sale of "space" in consumers' magazines published by the chains.
- (5) Organizing to oppose adverse legislation by actively co-operating with agricultural producers and manufacturers, by improving corporate chain labour relations, and by establishing closer contact with the consuming public. (These efforts had an effect in Maine, a State that repealed its chain store tax. In Florida, too, the co-operation of the citrus growers with the corporate chain largely helped to defeat the drastic anti-chain "Recovery Act.")

During the year, to be sure, some corporate chains converted their organizations, partially or wholly, into "voluntary" associations. Some limited their 1937 expansion to the addition of independently-owned "associate" stores. Such conversions and expansions, however, were not significantly numerous.

The publication, early in 1937, of the Census of Business for 1935 made it possible to compare the 1935 status of the corporate chain in the United States with the year 1929 and with the year 1933, the years of the two preceding censuses of distribution. In 1929, the corporate chains secured 20.0% of the total volume of retail sales, in 1933 they increased their share of the total to 25.4%, and in 1935 they fell off to 22.8%. While the volume of corporate chain sales increased in 1935 over 1933, that increase was less than the increase in the volume of the independents. Comprehensive and proportionate data for 1937 is unavailable. However, for the first 11 months of 1937 the average volume for all corporate chains was 9.8% greater than for the comparable period in 1936.



Detailed and authoritative data pertaining specifically to corporate chain stores or "multiple shops" in Great Britain are unavailable. However, the British National Chamber of Trade lumps together the "co-operative" and the "multiple" store and puts their combined number at ten in every 100 of about 1,000,000 retail establishments. The accepted proportion of the total retail business in Great Britain done by the co-operative and the "multiple shop" is not less than 30%.

A growing British opinion has been evident to the effect that the "multiple shops" are diverting trade in increasing amounts from the independent retailer and that the future of private trading is a political problem. This opinion became articulate in 1937 in the discussions of the shops (Retail Trading Safeguards) Bill which was introduced into the House of Commons by Captain Balfour and which specified a census of all shops, and the establishment of three Retail Trade Commissions to issue licences to all "multiple shop" systems numbering more than six stores under common control. The Bill made little progress toward enactment. (See also RETAIL SALES.) (G. R. C.)

**Chamberlain, Arthur Neville** (1869— ), British statesman, son of Joseph Chamberlain; entered Parliament 1918, and the Cabinet in 1922; Chancellor of the Exchequer 1923–24 and from 1931, till he became Prime Minister on the retirement of Mr. Baldwin (q.v.) on May 28, 1937. A biographical notice of him is in the *Encyclopædia Britannica*, vol. 5, p. 201. His accession to the premiership involved no change of policy, but a number of changes were made in the ministry (see CABINET MEMBERS: Great Britain), and the First Commissioner of Works ceased to hold Cabinet rank.

As Chancellor of the Exchequer, Mr. Chamberlain introduced his sixth budget (see GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF: *Banking and Finance*) on April 20; this was chiefly remarkable for the sections relating to the National Defence Contribution (N.D.C.), which was so severely criticized in the city and elsewhere that on June 1, as Prime Minister, Mr. Chamberlain announced their withdrawal and their replacement by a simpler profits tax on similar lines that would produce at least an equal revenue.

On May 31 he was unanimously elected leader of the Conservative Party, at the annual conference of which he made an important speech (Oct. 8), in which he dealt with the unsettled state of Europe, welcomed President Roosevelt's declaration of the necessity for a return to a belief in the pledged word and the sanctity of treaties as evidence of America's willingness to co-operate in the restoration and maintenance of peace, and emphasized the necessity for Britain's rearmament. On June 25, in the House of Commons, he made his first important speech, as Prime Minister, on foreign affairs, and on July 3 visited his constituency and explained to the Birmingham Conservative Associations the main points of his policy, which, he said, were: to keep the peace, to ensure that Britain would be so strong as to be universally respected, to increase trade, employment, and prosperity, and to carry on and improve the social services. At the end of July his

exchange of personal letters with Signor Mussolini did much to clear the atmosphere in regard to Anglo-Italian relations.

On Nov. 9, at the Guildhall banquet, Mr. Chamberlain, besides speaking of the situation in Spain, Britain's relations with the "Berlin-Rome axis," and "the really astonishing economic progress which has been made by the world as a whole since the dark days of 1932," mentioned that the essential factor for success in any endeavour to bring about a settlement of the Sino-Japanese dispute was the co-operation of the United States, and that he was now engaged in informal discussions with a view to the eventual conclusion of an Anglo-American trade agreement, negotiations towards which, he announced in the House of Commons on Nov. 19, were making progress.

**Chamberlain, Sir (Joseph) Austen** (1863 – 1937), British statesman whose fame rests mainly upon his service as Secretary of State for Foreign Affairs from 1924–29, the story of which is included in the account of his career in the *Encyclopædia Britannica*, vol. 5, p. 201. One of the most influential Conservative members of the House at the time of his death in London on March 16, 1937, he was largely responsible for forcing Sir Samuel Hoare to resign as Foreign Secretary in Dec. 1935, upon disclosure of a Franco-British plan to appease Italy with virtual possession of half of Ethiopia. In 1935 also, he was the author of an autobiography, *Down the Years*.

**Chambers of Commerce.** In 1937 chambers of commerce continued their evolution as part of the American business and social machinery. In the United States today there are about 2,000 organized chambers of commerce, besides other organizations that operate somewhat similarly.

They are financed usually by voluntary subscriptions or membership fees. Their budgets, varying widely, will average about forty cents per capita. Staffs range from one man and a stenographer in smaller communities to a general manager and numerous department chiefs in larger centres. Chambers of commerce originally were concerned primarily with the exchange of commodities, the price of goods, transportation and the laws of trade. But as American cities grew they became civic organizations as well as business promoters. During the World War they extended their activities as also in the depression of 1929. Significant in 1937 was the adoption by many chambers of policies respecting industrial relations. These policies were not in opposition to organized labour or in support of management; they were directed at the preservation of industrial peace in the public interest. (H. S.)

**Great Britain.**—Great Britain in 1937 numbered 107 chambers associated with the central body, the Association of British Chambers of Commerce whose president for the year was Sir Geoffrey Clarke, C.S.I., O.B.E. The membership of the affiliated chambers in 1937 was 45,608.

**Channel Islands.** A group of nine islands off the Norman coast, in British possession, administered by lieutenant-governors appointed by the Crown, and by local, mainly elected, parliaments called "States." Jersey, the largest, has a separate administration; Guernsey has jurisdiction over Alderney, Sark, Herm, and the rest. Capitals: (Jersey) St. Helier, pop. 25,824; (Guernsey) St. Peter Port, pop. 16,720.

**Area and Population.**—Area: 75 sq.mi. (Jersey, 28,717ac.; Guernsey, 15,654ac.; smaller islands, 3,712ac.). Pop. (census 1931): Jersey, 50,462; Guernsey and dependencies, 42,743.

**Religion, Language, Education.**—The islands form two dean-



NEVILLE CHAMBERLAIN, prime minister of Great Britain



eries of the Anglican diocese of Winchester. The official language is French, still largely spoken locally; but English is everywhere understood, and may be used in the states. Education is carried on by public instruction committees on lines similar to the British; the principal educational institutions are Victoria college (Jersey) and Elizabeth college (Guernsey).

**Industry, Communications.**—The main industry is agriculture—fruit, potatoes, flowers, etc., being produced on small holdings. About 43,000 ac. are cultivated. Guernsey and Alderney dairy cattle are famous. Trade is almost entirely with Great Britain to which agricultural produce and granite are exported. The service on the Jersey railway is suspended. Jersey and Alderney have airports, and Jersey is linked by regular air services with Alderney, Southampton, and London.

**Finances, etc.**—Both Jersey and Guernsey mint their own copper coinage; otherwise British imperial currency is used. In Guernsey the state and banks issue their own £1 and 10s. notes. Taxation is very low. In 1936 the revenue of Jersey was £441,582, and its expenditure £429,615; those of Guernsey (1935) £567,695 and £497,273 respectively. The total debt of the islands is about £2,666,000. Service in the local militias is compulsory for adult males.

**Chautemps, Camille** (1885– ), French statesman; born in Paris; was an advocate before the Court of Appeal from 1904; Radical-Socialist deputy for Indre-et-Loire, and later Loir-et-Cher, and from 1933 senator for the latter department. In the Herriot cabinet of 1924 he was minister for the interior; in 1925–26 minister for the interior and for justice; and prime minister, for twenty-four hours, in Feb. 1930. In the Steeg cabinet of 1931 he was minister for public instruction, and again of the interior in the governments between June 1932 and Nov. 1933, when he again became prime minister until the following Jan. 27, his government being then overthrown as a result of the Stavisky affair. In the Sarraut government of Jan. 1936, he was minister for public works, and in M. Blum's government, formed in June of that year, minister of state. On M. Blum's fall in June 1937, he formed a ministry with a mandate to effect extensive economies and rescue France from a dangerous budgetary situation. In Nov. 1937 he paid a short visit to London, with his foreign minister, M. Delbos, to exchange views on the international situation with the British ministers.

**Cheese.** Production of cheese in the United States in 1937 was estimated by the U.S. Department of Agriculture at 473,531,000 lbs., a decline of 14,045,000 lbs., or 3% below 1936, but the second largest output on record. Wisconsin produced about 60% of the total. There were declines in older cheese-manufacturing states, but a general increase in production throughout the South, especially in Texas.

Cheese production in the United Kingdom in 1937 was 771,900 cwt., compared to 1,087,400 cwt. in 1936. Factory output declined during 1937, but farm production increased. British imports for the year were 2,937,000 cwt. (2,994,000), figures in parentheses being for 1936, valued at £9,257,000. Ninety per cent of imports were from Empire countries, New Zealand accounting for 1,731,000 cwt. (1,681,000); Canada for 722,000 cwt. (603,000); the Netherlands for 217,000 cwt. (182,000). British cheese consumption per capita in 1937 was 8.6 lbs.; in 1936, 8.8 lbs.; in 1935, 9.1 pounds. Per capita consumption in the United States remains about 5.5 lbs. while in Switzerland it is four times that amount, nearly three times as much in Denmark and Holland and about twice as much in France, Germany, Italy, Sweden and Norway.

Almost every country in Europe and North America is both an

importer and an exporter of cheese, exporting native varieties and importing foreign varieties. Total export in the world cheese trade for the 10 months ending Oct. 31, 1937, was estimated by the International Institute of Agriculture at 509,438,000 lbs. compared to 462,366,000 lbs. in 1936, while imports were, respectively, 502,305,000 and 454,693,000 pounds. New Zealand was the largest exporter, 148,405,000 lbs. (144,965,000), figures in parentheses being for the corresponding 10 months in 1936. The Netherlands was second in exports, 115,362,000 lbs. (103,223,000). Other leading exporters were for the 10 months: Canada, 71,417,000 lbs. (60,581,000); Italy, 44,073,000 lbs. (31,800,000); Switzerland, 32,185,000 lbs. (35,140,000); France, 20,331,000 lbs. (18,953,000); Denmark, 17,344,000 lbs. (17,970,000); United States, 977,000 lbs. (955,000). Germany in the 10 months ending Oct. 31, 1937, imported 66,668,000 lbs. of cheese; the United States, 49,712,000 lbs.; Canada, 1,063,000 lbs.; France, 24,560,000 lbs.; Switzerland, 2,848,000 lbs. (S. O. R.)

**Chemical Warfare.** Chemical warfare comprises the use in war of what are popularly known as "poison gases," though there are liquids giving off vapours usually included in that term which are not, strictly speaking, gases at all. For the sake of clearness they will all be described in this article as "war gases." Their use in war is not altogether an innovation. The Spartans used pitch, sulphur, and burning charcoal to irritate the defenders in the siege of Plataea in 429 B.C., and the use of stink bombs was not unknown in the Middle Ages. The possibility of the use of war gases was sufficiently apparent for it to be prohibited by the Hague Conventions of 1899 and 1907. The Prohibition, and the wide and devastating effect, quite unforeseen by the German high command, alike account for the indignation and consternation aroused by the German use of chlorine in the Ypres salient in April 1915. Most of the important countries of Europe, including Great Britain, adhered to the Geneva Gas Protocol of 1925, which again prohibited the use of war gases; but they all include their manufacture in their armament programs.

War gases are, broadly speaking, of four kinds: lung irritants, tear gases (or "lachrymators"), nose irritants (or "toxic smokes"), and blister gases (or "vesicants"). There may also be included under the category of war gases certain gases which directly attack the nervous system, the most important of which is hydrocyanic (prussic) acid gas, a high concentration of which will kill its victim in about two minutes. A respirator is a complete protection against this gas. The war gases must be classified under two further heads, as either "persistent" or "non-persistent." The latter vaporize on the burst of the projectile containing them, and conditions of high wind, heavy rain, thick fog, or hot sun are all unfavourable to their use. The former are vapours given off by liquids with a high boiling-point. War gases are discharged by shell or projector bombardment, by bursting grenades, and from air-ships or aeroplanes either by bombs or by sprayers.

The lung irritants, chlorine and phosgene, are true gases, and therefore non-persistent. They are stored in liquid form and vaporize on release of pressure. They are heavier than air, chlorine two-and-a-half times so, phosgene three-and-a-half. Chlorine has a choking smell, irritates the eyes and respiratory organs, and frequently leads to bronchitis or pneumonia. Phosgene is five times more lethal than chlorine, and therefore is likely to supersede it for future use. Phosgene has a faint smell of musty hay; and it tends to work its way down into cellars and dug-outs. It attacks the eyes and respiratory organs, like chlorine, but with far worse effects; its action is delayed, a deceptive period of well-being intervening between the attack and its re-



sults. The respirator affords complete protection against the lung irritants.

The three types of tear gas are virtually harmless except for their temporary effects; they used to be dangerous, in that they penetrated respirators and caused the victim to remove his respirator, so leaving him unprotected against more harmful gases. But the modern respirator affords complete protection.

There are three types of nose irritants, all compounds of arsenic and highly poisonous: they produce burning pains in the nose, throat, and chest, followed by acute mental depression. With these, again, the respirator gives complete protection.

The blister gases are mustard gas and Lewisite. The former, when in liquid form, is either crude, and dark brown in colour (as used in the Great War), or pure, and pale straw-yellow. It is both persistent and insidious, the vapour having a faint smell only. In its liquid form it sinks into the skin, and causes severe blistering, which is very difficult to heal and readily becomes septic. In the eyes it causes conjunctivitis and often complete blindness. The vapour is less severe in its effects, but a high concentration has very serious results, and if inhaled there is a danger of broncho-pneumonia. Lewisite is colourless when pure, and brown in its crude state. The vapour is invisible, but with a strong smell of geraniums. The liquid has quicker and somewhat more severe results than mustard gas, but is readily destroyed by water or alkalis. With the blister gases the respirator alone does not afford complete protection, but oilskin clothes and rubber boots are also necessary.

The blister gases constitute the most serious danger of chemical warfare. They are persistent—especially mustard gas; they are most severe in their results; they contaminate food supplies; and they penetrate nearly every material except glass, porcelain, and unglazed metals. It is impossible to work except for very short periods in protective clothing, and decontamination, which can be effected by weathering, sealing, destruction, or removal, requires great care, and in the last cases great skill. While soap and water in each case, and chlorine (in a bleach paste) in the case of mustard gas, if used in time, can remove or destroy the poison on an individual victim, successful treatment must involve clear thinking and self-control, probably in the midst of a panic. The nature of the protective clothing, and the fact that it is impossible to speak or eat in a gas mask must impede all normal activities, and while it is perfectly possible to make rooms gas-proof, the incendiary bomb may make their occupation impossible. While, therefore, mustard gas in particular may be most useful in keeping the enemy out of an area in military operations, the real terrors of chemical warfare are reserved for its use against the civilian population. (See also *ARMIES OF THE WORLD: Chemical Warfare*; *CIVIL POPULATION, PROTECTION OF*; *MUNITIONS OF WAR: Chemical Warfare*; *WARFARE*.) (W. T. WE.)

**Chemistry.** The extent and detail of the publication of results of scientific investigations are among the striking phenomena of modern civilization. In chemistry, alone, there appeared in 1937 a fifth of a billion words which were found worthy of systematic abstracting. This material was published in about two thousand scientific journals throughout the world. More than ever is it evident that science knows less of international boundaries than does any other human activity. These two hundred million words on chemistry in a single year do not include books, reviews and summaries of known material, or patents. The mass of publication of new material in chemistry becomes still more significant when one considers that most of it has been condensed and compressed before publication because of the pressure on nearly every chemical journal in the world. A review of this material in two thousand words would allow one

word in this article for two hundred thousand words published during 1937 on chemical research. Obviously this would require an impossible degree of selectivity. The selection of important commercial developments is difficult enough but the selection of the truly important fundamental chemical achievements of a single year is impossible. The important developments of 1937 may not be recognized for years and the ones which seem interesting now may fail to be fruitful.

In attempting the impossible in this article, no effort will be made to indicate individual or national achievements. More than ever science is a team activity in which the work of every scientist depends on and influences the work of every other scientist. Moreover, science is really without national boundaries, even during a time when the primitive desire for national self-sufficiency has drafted the services of all the sciences, especially chemistry, that science which deals primarily with the changing of one material into another. A scientific secret is practically an impossibility. The mere knowledge that a thing has been done is usually enough of a clue to make possible its accomplishment by other scientists. The artificial subdivisions of science come closer together each year; hence this article will not attempt any separation of chemistry into its classical subdivisions.

**Atom-Smasher.**—New methods and tools properly catch the attention. The cyclotron or atom-smasher is properly described in the article on physics, although its results are of great interest to chemists. It gives the modern achievement of the ancient alchemical dream of converting one element into another, even though the newly found laws of such transmutations preclude the conversion of base metals to gold. Radio-sodium, a product of the cyclotron, is finding application as a substitute and supplement for radium in therapy. Radio-titanium has been added to the artificially radio-active elements. It has been possible to build up elements Nos. 93 and 94 by bombardment of Uranium (No. 92) with neutrons. The discovery of element No. 87 has again been announced, this time with the name of Mavadium instead of Virginium. (See also *MATTER, STRUCTURE OF*.)

Improvements in the methods for the all-important study of the composition of materials have continued. The separation between inorganic and organic methods and reagents in the analytical field is disappearing. Micro methods have continued to become more general during the year. In fact, macro methods in many fields are already falling into disuse. This is not merely because of the economy of material which was the original incentive for micro methods but because of their saving of time. The influence of these methods on the whole of chemistry can hardly be over-estimated. The polarograph has been revived for the purpose of analyzing complex mixtures of organic compounds. The iridescent properties of thin sections of ores have been applied to their rapid analysis.

Large scale molecular distillation has become important not only commercially but as a means of supplying hitherto rare materials in amounts sufficient for research. The increased use of highly refined fractional distillation methods has continued. The difficult problem of the composition of petroleum is gradually yielding to them and to the related methods of modern counter-current solvent extraction.

**Isotopes.**—The study of isotopes advanced rapidly during the year. Deuterium atoms have proved to be valuable tracers for following the course of chemical and bio-chemical processes, for instance, the formation and deposition of fats in animal organisms. The stereochemistry of deuterium compounds has been opened up. Further concentrations of the isotopes of oxygen and nitrogen have been achieved. The heavier isotopes of oxygen are more plentiful in rocks than in air and water. Heavy nitrogen will be a tracer for following the bio-chemistry of amino acids and pro-



teins. (See also ISOTOPES OF THE LIGHTER ELEMENTS, SEPARATION OF.)

Mathematical tools and related experimental techniques have been further developed. Their application to the 17-body system in the highly symmetrical neopentane molecule has been striking. Notable theoretical advances have been made in reaction kinetics, in the knowledge of optical rotation, in lyophobic colloids, and in viscosity. Important experimental refinements have also been developed in the latter field. Studies of the properties of simple molecules at very low temperatures have revealed new generalizations. Perhaps the most important of these deals with the lack of free rotation in molecules as simple as ethane. Insoluble monolayers of sterols and proteins have been studied with the development of new knowledge of molecular properties. Very accurate studies have been made of the dielectric properties of solids. The heats of hydrogenation and free energies of olefins and related compounds were determined.

The new tool of electron diffraction has given added knowledge of inter-atomic distances, especially of the C-C distance as it is influenced by other atoms. The somewhat older tool of the Raman spectrum has continued to give valuable results on even as simple a substance as water. In organic chemistry, one of the most general reactions is that involving carbonyl oxygen and alpha hydrogen. New studies of this old reaction have progressed slightly. The absence of electromers in the pentaenes has been demonstrated. Further work has been done on the mystery of molecular rearrangements, those strange reactions in which it is easier for a molecule to undergo an internal change than to limit itself to the external change on which the chemist has focused his mind.

**Catalysis.**—Catalysis has been further extended in the hydrocarbon field, including catalytic cracking, polymerization, and the new reaction involving the addition of a paraffin to an olefin. Sodium has been cheapened. Its use in organic reactions has been facilitated by the adaptation of various complex ethers as solvents. The clean cleavage of carbohydrates by periodic acid has been announced. Further applications were developed for the Diels-Alder reaction, probably the only distinctly new general reaction developed in organic chemistry in a decade. Ethylene, from cracking operations, continued as an important raw material for organic syntheses. The old reaction of chlorine with olefins to give substitution instead of addition was revived to make allyl chloride and methallyl chloride, potentially important raw materials for the resin industry. Old and new organic compounds of fluorine became available in large number.

The nature and origin of coal were further studied. No similar studies of petroleum were pushed except that clues may be given by differences in crude petroleum from different formations. These differences are becoming more evident as modern methods of distillation and solvent extraction are being applied. Cellulose has been further recognized as one of man's most important renewable raw materials. Increasing but still inadequate studies were made during the year.

**Resins.**—Resins continued to absorb much effort. Improvements were made in raw materials such as styrene and the methacrylates. Perhaps the most spectacular development in the resin field was the production of two resins, one of which adsorbs anions and the other cations from solution. Thus, at long last, is realized the one unfulfilled prophecy of Francis Bacon, the possibility of "straining salt from sea water."

Progress in the chemistry of materials related to life continued unabated. Surprising unities among these materials have been developing during the past few years. The nature and relationships of the sterols, both animal and vegetable, were greatly clarified. Related polynuclear compounds were extensively studied, especially as to their carcinogenic properties. The chemistry of the

products of the tubercle bacillus advanced decidedly during the year. The knowledge of plant products including their colouring materials and their alkaloids progressed slowly. The chlorophyll problem advanced somewhat. It was found that the alkaloid, colchicine, has the remarkable power of doubling the number of chromosomes in certain plants. Hydroxyethyl-apocupreine was further applied in the treatment of pneumonia.

The crystalline giant proteins related to virus diseases were further studied, as were the vitally important amino acids and their relation to proteins. The importance of having pure crystalline products for study has been exemplified by the crystallization of catalase and of vitamin A.

**Vitamins.**—Developments in the vitamins went on apace. The most notable among many notable achievements was the climaxing of a 25 year study of the antineuritic vitamin ( $B_1$ ) by its laboratory and commercial synthesis within the year. The relation of vitamins  $B_1$  and  $B_2$  to enzyme actions and the multiple nature of vitamin D were studied. The difficult problem of the fertility vitamin (E) was further advanced and a new vitamin (P) related to cell permeability was discovered. The importance of the vitamin field is evidenced by the award for 1937 of two Nobel Prizes to Szent-Györgyi and to Karrer and Haworth for work related to vitamins C and A. (See also VITAMINS.)

Studies of hormones continued with special emphasis on the sex hormones which have been such prolific sources of new organic chemical studies in the past few years. A new male hormone, epiallopregnanolone, was isolated and synthesized. At least two new hormones of sexual activity have been isolated from the adrenal glands. Enterocrinin, a new digestive hormone, was isolated.

Among high molecular weight natural products the visual purple of the retina was found to have a molecular weight of about 800,000. The highest speed super-centrifuge was still further refined and a less expensive model was adapted for general laboratory use. The extension of this important research tool will speed up the study of giant molecules. The yellow respiratory enzyme was further studied. Work was continued on the complex sapogenins.

**The Elements.**—The chemistry of the 90 elements other than carbon is due for a revival. Inorganic fluorine compounds became more prominent during the year, largely because of their relation to phosphate rock and to drinking water. Carbon dioxide was introduced into day-light incandescent lamps. Bearings of less usual metals such as silver and cadmium were introduced with mixed results but a net increase in the knowledge of such problems. Even the old subject of the composition of the atmosphere was restudied as was the newer one of the isotopic composition of natural waters.

The year saw great expansion in chemical research facilities in practically every country. Perhaps the outstanding event in this line was the dedication of a veritable temple of research, the new home of the Mellon institute in Pittsburgh, Pa.

With the growing complexity of chemistry and with its development of new experimental and mathematical techniques, an increasing number of adequately trained apprentices for the science is needed. The year 1937 gave every indication that the field of chemistry is as attractive as ever and offers opportunities to all who have the ability and energy to serve so exacting a task mistress. (See also CHEMISTRY, APPLIED.) (F. C. WH.)

**Chemistry, Applied.** The order in which advances in applied chemistry are noted is not to be taken as signifying their relative importance. In most instances it is still too early, Jan. 1, 1938, to know really which will prove of greatest significance.

The commercial development of high-vacuum molecular distillation, enabling the production of vitamin A concentrates from



fish liver oils and the application of the same process for the separation of many other substances was important. In addition to high vacuum which can be maintained in modern welded apparatus, the separation of the heating and cooling surfaces of the mechanism with respect to the size of the molecules to be separated is a unique feature. There has been put into operation the first large-scale commercial unit practising electrolytic reduction of organic compounds. At present tonnage quantities of hexahydric alcohols from glucose are being produced and these products are important as raw materials in the production of vitamin C, beside having applications in the printing and textile industries. (See VITAMINS.) Research has overcome objectionable colour heretofore a characteristic of sweet potato starch and has also showed how sweet potatoes may be stored, with the result that a factory began commercial operations. The resulting starch competes directly with cassava, heretofore imported, and the operation offers a beneficial outlet for surplus or unmarketable sweet potatoes. For many years the entire output of the world's only tantalum mine in Australia has been used by an American producer of this important metal. Improvements in methods for concentrating the ore have made it possible to use a considerable deposit in the Black Hills of South Dakota and this is now being mined, concentrated, and used as an additional important source.

A new plant began operations for the production of elementary phosphorus from phosphate by a new electrolytic process. This important element in highly purified form is being shipped in tank cars and becomes the starting point for the manufacture of high-grade phosphoric acid and many compounds of this element. In Canada the capacity of the plant refining radium-bearing ore has been trebled and the output of radium has served to reduce the price of the element imported into the United States to below \$30 per milligram. A new electrothermal process for refining magnesium is reported to yield this lightest of metals at a cost below that of aluminium. In Europe there has been a quickened interest in synthetic rubberlike materials. New types of buna rubber made in Germany were manufactured and the rate of production for 1938 has been set at 20,000 metric tons. In Italy government subventions for the development of synthetic rubber were announced, as were similar plans in Czechoslovakia. In the United States one of the synthetic rubberlike materials, neoprene, was produced to an amount of over 1,500,000 lbs., and another type available in several varieties, thiokol, was produced in increasing quantities.

Important developments in the utilization of cracking gases from petroleum and natural gas saw the commercial establishment of polymerization processes whereby olefines yield polymers of gasoline character important for their high anti-knock value as well as a long step toward conservation of petroleum products. Iso-octane, heretofore relatively rare and used only as a standard for measuring anti-knock values, was produced in commercial quantities for aviation. The quantity produced in 1937 was about 2,000,000 gallons. Refinery gases as a source of acetone became a factor of serious disturbance in the acetone market, and new solvents produced from ethylene and similar hydrocarbons were placed upon the market. New processes for the recovery of carbon dioxide from the flue gases of power plants were put in operation with a view to increasing the output of dry ice and other developments enabled the removal of sulphur dioxide from such gases, thus decreasing the pollution of the atmosphere and yielding elemental sulphur as a valuable product.

To the growing family of synthetic resins and plastics 1937 saw added styrene characterized by clarity, low initial colour, and thermoplastic properties, as well as improvements in the acrylic and metacrylic resins. Improved technique in the use of resins

for large mouldings saw the material enter the field of large radio cabinets and lighting fixtures. New types of vinyl resins were developed and a plant erected with a view primarily to improving safety glass, particularly as regards plasticity at very low temperatures. Various resins, especially those of the glyptal type, found more extensive use in lacquers and enamels, aided by additional improvements in pigments of the titanium type.

Extensive experiments and tests nearing completion demonstrated that a new type of rayon fibre retains its strength at the high temperatures developed in truck and bus tires, giving it an advantage over most cotton cords. The mileage with such tires is very greatly increased over those usually employed. The same type of fibre with as many as 390 filaments per thread composed the 4,000 sq. ft. quadrilateral jib of the "Ranger" and was a factor in the success of that American Cup defender. Ethyl cellulose made its appearance as a wrapping material. (See also RAYON.)

In Germany following experiments with a pilot plant a large commercial unit for the production of synthetic fatty acid was completed and put in operation. The output will be used solely for technical purposes, particularly in the manufacture of soaps, thereby conserving vegetable oils and fats. Both abroad and at home advances were made in detergents which suppress the formation of insoluble calcium and magnesium salts, which are present in hard waters, and also of wetting agents which possess extraordinary penetrating, spreading, emulsifying, and wetting-out properties of importance wherever aqueous solutions are used, as in the textile industry. Encouraging progress was made in the effort to perfect insecticides and fungicides to replace lead and arsenate, objectionable in those instances where spray residues can be removed only with difficulty. The new materials come principally from the field of synthetic organic chemistry.

Research in the difficult field of vitamins and hormones has borne fruit in applied chemistry with the commercial synthetic production of vitamin B<sub>1</sub> and similar syntheses of certain hormones.

Translucent laminated plastic readily formed and fabricated in any ordinary punch press made its appearance for use in instrument dials and lighting fixtures. Success rewarded the efforts to use submerged moulds for the production of calcium gluconate and sorbitol with lactic acid and other materials ordinarily fermented in shallow pans. The use of a revolving drum for these moulds has made them as available for commercial processes as are yeasts and bacteria.

Chemistry has come to the aid of the textile industry in providing new fast colours and permanent water-repellent finishes for all types of cotton and linen fabrics, a new crush-proof process for rayon-pile velvets which are made resistant to spotting by the use of the water-repellent finish referred to above, new sizes, and the use of synthetic resins in textile finishing.

Turpentine is now dehydrated to remove the free water which caused rusting of containers and subsequent discolouration of turpentine. Fertilizers have been granulated to prevent caking in storage and improved drillability, and new compounds high in nitrogen and other elements and designed to be low in equivalent acidity have been manufactured. While there seems to be evidence that the list of new processes and materials introduced in a given year is shorter in times of relative prosperity than in depression, the contributions of 1937 are in many instances notable nevertheless.

(H. E. H.)

**Chemistry, Institute of.** The membership roll has increased by over 200 to nearly 7,000. Local sections, of which there are over 20 in Great Britain and the Dominions, have been busy, and many valuable papers have been read and published in the *Journal*. Lectures published



from headquarters include "Gas-defence from the point of view of the chemist" and "Chemical changes and chances." Among matters to which the council has directed special attention are teaching of general science in schools and a means whereby a form of voluntary registration for qualified chemists (other than pharmacists) may be effected. The Institute completed its 60th year.

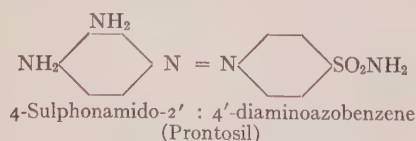
## Chemotherapy.

Chemotherapy deals with those chemical compounds which exhibit a greater toxicity for specific parasites than for the tissues of the hosts in which such parasites are found. The evaluation of chemotherapeutic remedies depends on (1) the production of a series of chemical compounds; (2) a study of the pharmacology, toxicity, and therapeutic activity of these compounds in experimental infections in animals, with determinations of chemotherapeutic indices, and (3) investigations of the therapeutic activity and toxicity of these compounds in natural infections in man and in animals. It is obvious that such investigations must extend over considerable periods, especially with diseases of long duration, such as syphilis and sleeping sickness.

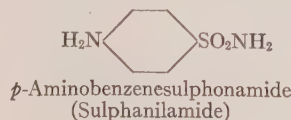
In the treatment of syphilis, a number of new ter- and quinquivalent arsenical compounds have been studied, but no important advances have been made. Among a homologous series of derivatives of *p*-aminophenylarsonic acids of the general formula  $(\text{HO})_2\text{AsO}\cdot\text{C}_6\text{H}_4\cdot\text{NH}\cdot\text{CO}\cdot(\text{CH}_2)_n\cdot\text{CO}\cdot\text{NR}_1\text{R}_2$ , prepared by Morgan and Walton (1931), sodium succinylmethylamide-*p*-arsonate ( $n=2$ ;  $\text{R}_1=\text{H}$ ;  $\text{R}_2=\text{CH}_3$ ) has been shown to have curative effects both in neurosyphilis and in primary and secondary syphilis.

This compound "neocryl" has also been found effective in clearing up symptoms in African sleeping sickness (trypanosomiasis); it is as yet too early to determine whether it is superior to tryparsamide (Murgatroyd, 1937). Morgan and Walton (1937) have shown that trypanocidal action is enhanced by an amide group in the *p*-position in phenylarsonic acid. In 1935, Jancsó and Jancsó and Schern and Artagaveytia-Allende found that synthalin (decamethylenediguanidine) exerts a curative action on mice infected with various pathogenic trypanosomes. This observation has been confirmed by King, Lourie, and Yorke (1937), who have studied the action of a number of synthetic guanidine and related compounds, of which undecanediamidine appears to be the most active therapeutically in laboratory animals.

The most important chemotherapeutic advance during 1937 has involved the clinical exploitation of the discovery made by Domagk (1935) that azo-compounds containing the sulphonamide group ( $-\text{SO}_2\text{NH}_2$ ) possess a curative action in streptococcal infections in mice and rabbits. The first compound prepared, 4-sulphonamido-2': 4'-diaminoazobenzene (prontosil) was introduced in the form of a hydrochloride: it is sparingly soluble in water and is given by mouth.



Tréfouël, Nitti, and Bovet (1935) showed that the essential part of the molecule is the benzene nucleus containing the sulphonamide group in the *para*-position to an amino group, and *p*-aminobenzenesulphonamide proved to be highly active against haemolytic streptococcal infections.



Under the names "sulphonamide-P" and "sulphanilamide," this is now being extensively used. As might be expected, many derivatives of this simple substance have been made, of which a few have come into clinical use. These compounds have been successfully employed in the treatment of haemolytic streptococcal infections, particularly puerperal fever (of which the mortality has been reduced), chronic streptococcal lesions, and erysipelas. Infections due to *Streptococcus viridans* are relatively unaffected. In streptococcal meningitis, and to a less extent in meningococcal infections, good results have been obtained. Cures have also been reported in experimental animals and, to a limited extent in man, of pneumococcal infections, especially those of Type III, and of gas gangrene. In gonococcal and staphylococcal infections the results have been less satisfactory than in diseases due to the haemolytic streptococcus. A large number of other compounds have now been prepared which are highly active in laboratory animals infected with streptococci, pneumococci, gonococci, and staphylococci. These compounds await clinical trial. Their method of action is at present uncertain: as they are weak antiseptics their action on the organisms is slight and growth only is delayed; the defence mechanism of the body is unimpaired.

Arising out of this work Buttle, Stephenson, Smith, Dewing, and Foster (1937) in England have shown that in laboratory tests 4:4'-diaminodiphenylsulphone is a much more active streptococcal agent than sulphanilamide, but unfortunately more toxic. In France di-(*p*-acetylaminophenyl)-sulphone and 4-nitro-4-amino-diphenylsulphoxide have been used with success in the treatment of gonorrhoea. Sulphanilamide has also been employed in cases of infections of the urinary tract due to *Bacterium coli* and in one case of infection with *Bact. typhosum*. Toxic reactions have been described as a result of the use of these substances, more especially prontosil and sulphanilamide. Reactions are not common; the most frequent are nausea, vague abdominal discomfort, diarrhoea, headache, disorientation, choking or drunken feelings, acidosis, fever, cyanosis, methaemoglobinemia, and sulphaemoglobinemia. Less common complications are acute haemolytic anaemia and anginal agranulocytosis. Some degree of polychromasia is almost always present, while excretion of porphyrins in the urine and faeces is increased. Optic neuritis has occurred, and skin rashes, either morbilliform or maculo-papular in type, possibly due to photosensitization, have been recorded. Exfoliative dermatitis is rare.

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(G. M. F.)

## Chess.

The outstanding event of the year 1937 in the chess world was the recapture of the world championship title by Dr. Alexander Alekhine, the first occasion in the history of the championship when such a "come-back" has been made. Alekhine was champion from 1927—when he defeated Capablanca, the holder since 1921—until his defeat by Dr. Max Euwe in 1935; in 1937 he challenged Euwe, and the match took place in various towns in Holland between October 5 and December 16, 30 games being played, the winner to be he who first scored 15½ points. Alekhine won 11 games, Euwe 6, and 13 were drawn.

After the match Dr. Euwe announced that, if his subsequent tournament play warranted it, he might make an attempt on the title in four or five years. In August the International Chess Federation decided that Salo Flohr, of Czechoslovakia, would be the next challenger.



The following are the results of the more important international and other tournaments held during the year: At Hastings (ended January 6), Alekhine (France) attained first place with a score of 8 points out of a possible 9; Reuben Fine (U.S.) was second, and E. Eliskases (Austria) third. Others to be placed were, in this order: Dr. Vidmar (Yugoslavia), M. Feigin (Latvia), T. H. Tylor and W. Winter (Great Britain), G. Koltanowski (Belgium), Miss Menchik (Czechoslovakia), and Sir George Thomas (Great Britain).

At the third annual Easter Congress at Margate, first place was shared by P. Keres (Estonia) and R. Fine; Dr. Alekhine came second, and J. Foltys (Czechoslovakia) third.

In July, an international tournament was held at Kemer, Latvia, Great Britain not being represented. This resulted in a triple tie, Reshevsky (U.S.), Petrov (Latvia), and Flohr (Czechoslovakia) each winning 12 points, to the 11½ of Dr. Alekhine and Keres and the 11 of Steiner (Hungary). Later in the month the match between Miss Menchik and Miss Sonja Graf was held at Semmering, and was won by Miss Menchik by 11½ points to 4½, her challenger winning only two games.

The sixth international team tournament for the Hamilton-Russell Cup was held at Stockholm, July 31–Aug. 14; 19 countries took part, and for the fourth time in succession the cup went to the United States, their team consisting of R. Fine, I. Horowitz, I. Kashdan, F. J. Marshall, and S. Reshevsky. Hungary was second, and Poland and Argentine equal third; the British Empire finished thirteenth. Miss Menchik retained her world women's championship, winning all her 14 games.

The last international meeting of the year was held at Semmering and Baden, near Vienna, September 8–27, Dr. Euwe acting as umpire; the first prize went to Keres, of Estonia, with 9 out of a possible 14 points; Fine (U.S.) was second with 8, and Capablanca (Cuba) and Reshevsky (U.S.) tied for third with 7½. At the Hastings Congress that opened on December 28, Reshevsky won first prize in the premier tournament, Keres and C. H. O'D. Alexander were bracketed second, and Flohr and Fine fourth. (L. H. D.)

**Chiang Kai-shek** (1886– ), Chinese general and political leader, a native of Ningpo, Chekiang province. Joining the Kuomintang at an early age, Chiang Kai-shek became head of the Whampoa Military Academy under the nationalist régime headed by Dr. Sun Yat-sen in Canton, in 1920. He first came into nation-wide prominence as the outstanding leader of the advance of the nationalist forces from Canton to the Yangtze valley in 1926–27. After the capture of Shanghai and Nanking in the spring of 1927, Chiang broke off relations with the Communists, who had hitherto been co-operating with the Kuomintang, suppressed them in the territory under his control and gave a socially more conservative turn to the entire nationalist movement. In the summer of 1927 he married Miss Mayling Soong, sister of the well known financier, T. V. Soong. Especially during recent years Mme. Chiang Kai-shek has been closely associated with her husband's arduous administrative tasks. Since 1927 Chiang Kai-shek has been China's national leader. He has several times assumed and resigned the post of Premier in the Nationalist Government; but he has always remained generalissimo of the Chinese armed forces, so far as these were subject to Central Government control. Chiang Kai-shek was detained for two weeks in Dec. 1936, by his subordinates, Marshal Chang Hsueh-liang and General Yang Hu-cheng. Personal and political grievances were mingled in this attempted *coup d'état*, which ended with the release of Chiang and the retirement of the generals who had detained him. After this incident, however, Chiang was apparently won over to the idea of a

more conciliatory attitude toward the Chinese Communists, who, in turn displayed readiness to renounce their more extreme ideals of social revolution and to co-operate again with the Kuomintang and the Nationalist Government. Chiang Kai-shek faced the supreme crisis of his career when the initial clash at Lukowkiao, near Peiping, developed by successive stages into a major war between Japan and China (see CHINESE-JAPANESE WAR). Despite the military reverses which by the end of the year had led to Japanese occupation of most Chinese territory north of the Yellow river and of the Shanghai-Nanking area, Chiang Kai-shek gave no indication of a desire to sue for peace, remaining faithful to a statement which he made at the beginning of hostilities: "Let us realize that, once war has begun, there is no looking backward, we must fight to the bitter end." (W. H. CH.)

**Chicago,** American city, port of entry, county seat of Cook county, Ill., is situated at the south-west corner of Lake Michigan. It is the second city of the United States in population, manufactures and volume of trade. It is the largest centre of rail traffic and of air traffic and is a port for a great tonnage conveyed by lake ships, principally bulk cargoes of iron ores, fuel and blast furnace flux. It has access by the Illinois waterway to the inland navigation routes of the Mississippi valley. Small steamers make direct ocean voyages to and from Chicago via the St. Lawrence river and the Welland canal.

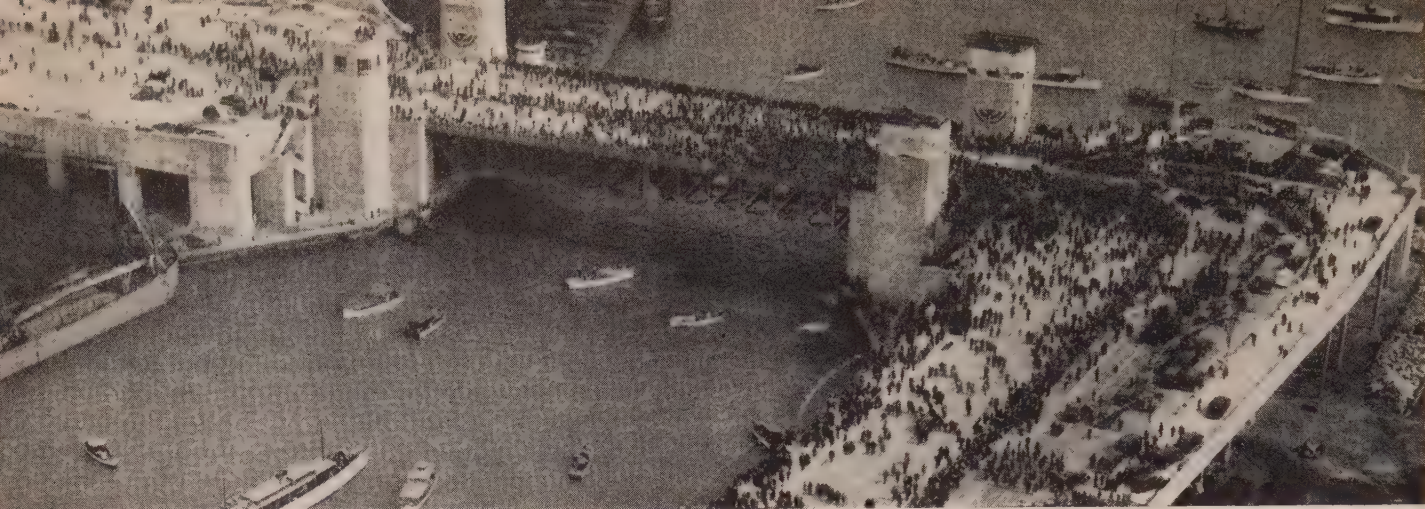
Chicago's population in 1937 was set at 3,632,701 by the U.S. Census Bureau in an estimate announced December 3. This represents a gain of 256,263 since the decennial census of 1930 when there were 3,376,438 inhabitants in the city proper (area 201.90 sq.mi.) and 4,364,755 in the entire metropolitan district with an area of 1,119.29 square miles. The recent estimate indicates that Chicago has more than regained a loss of 117,920 indicated by a quasi-official check in 1934 to determine the effects of the economic depression.

By the close of 1937 lack of adequate housing was felt, but construction declined in the latter part of the year after a slight gain in earlier months. The city still labours under the handicap of an antiquated building code, amendment of which has been long promised but not yet made by the city council.

Most of 1937 may be described as uneventful and prosperous by Chicago standards. Although 85,000 families were in receipt of direct relief and close upon 100,000 were at times employed upon Federal Works Progress Administration projects, the city's manufacturing establishments early in the year approached capacity output. In 1935, year of the last Federal business census, they employed 318,718 persons, paid \$368,020,000 in wages and sold goods valued at \$2,379,773,000.

For 75 years a storm centre of the labour movement in the United States, Chicago, except for its outlying steel communities, enjoyed comparative calm in 1937 while nearby areas were scenes of widespread strikes. Most of the city's trades, already organized under the American Federation of Labor, remained calm, differences being settled by negotiation. A strike of taxi-drivers brought the only considerable violence in the downtown parts of Chicago but there were no fatalities. Just within the city's south-eastern border, however, on May 30 occurred a sanguinary conflict between strikers organized by the Committee for Industrial Organization and Chicago police near the gates of the plant of the Republic Steel Corporation. Ten strikers were slain by police gunfire. A coroner's jury pronounced the cases to be justifiable homicide, finding that the police fired in self-defence. A U.S. Senate committee and a "Citizens Emergency Committee on Industrial Relations" arrived at contrary conclusions. The cases were closed December 21, when 61 rioters were dismissed with trifling fines.





**OUTER DRIVE BRIDGE, Chicago**, formally opened by President Roosevelt, largest bascule bridge in the world, 331 feet long, 108 feet wide and costing \$12,300,000

Chicago's perennial struggle with crime resulted in substantial improvement in 1937. The annual report of State's Attorney Thomas J. Courtney showed that 1,176 defendants were sent to State prison, and 464 to the county jail or city bridewell during the year. Probation was given to 329 offenders. Convictions were obtained in 89% of cases against gunmen and burglars. Convictions were had in 94% of cases of automobile theft and that class of crime has been reduced to its all-time-low record in Chicago.

The city celebrated the centennial anniversary of its charter as a city by the State of Illinois by a series of pageants beginning March 4 called the Charter Jubilee. The year's gala occasion was the formal opening of the Outer Drive bridge near the mouth of the Chicago river. This project begun in 1931 had been interrupted by the economic depression. Work was resumed in 1935 with the aid of Federal grants amounting to \$2,330,181. The entire cost of the works was \$12,300,000. Completion of the bridge gave to Chicago a new boulevard from the northern to the southern parts of the city along the shore line of Lake Michigan, and obviated the necessity of motor traffic passing through the "Loop," central business district. President Franklin D. Roosevelt was the principal speaker at the opening ceremonies on October 5, delivering an address on world affairs which led to the calling of the Nine-Power Conference at Brussels to consider Far Eastern affairs.

Work was begun and two-thirds completed on a lock at the mouth of the Chicago river to prevent storm water in the city from reversing the river's flow and emptying sewers into the lake, from which the city's drinking water is obtained. This project is in anticipation of the reduction of the city's diversion of water from Lake Michigan on Jan. 1, 1939, to 1500 cu.ft. per second from the present 5000 cu.ft. per second. The control lock is part of a program involving the rerouting of the city's sewers to newly erected disposal works. This immense undertaking, involving expenditure of \$60,000,000 and the building of 73 miles of intercepting sewers, was approaching completion at the end of 1937. The budget of the municipality of Chicago for 1937 aggregated \$131,876,630.

(L. H. L.)

**Chicago, University of.** An institution of higher education and research in Chicago, Ill., founded in 1890. On Oct. 1, 1937, the members of the faculty, exclusive of assistants and of teachers in the laboratory schools, numbered 840. In all departments and in all grades of service the university employed approximately 3,000 persons. In the autumn quarter, 1937, there were 7,705 students; 4,345 men and 3,360 women. Of this number 3,705 men and 2,330 women were in the divisions and professional schools and 640 men and

1,030 women in University college (downtown division offering evening and Saturday courses). The total enrolment for the academic year 1936-37 was 12,788. The home study, or correspondence, department had an average enrolment of 3,670, exclusive of the totals given above.

The total funds held by the university as of June 30, 1937, amounted to \$121,638,348.50, an increase of \$5,114,179.80 over the figure in 1936. These funds were divided as follows: endowment, \$67,237,276.10; plant, \$41,446,531.55; other funds, \$12,954,540.85. The total income of the several divisions of the budget was \$7,657,359.85, an increase over the previous fiscal year of \$43,781.68. The University of Chicago Press published 71 books during the academic year 1936-37, in addition to 32 bound books and pamphlets, the annual proceedings of seven professional societies, four maps, and 16 scholarly journals.

Two notable curricular changes took place during 1937. By integrating fundamental subjects such as psychology, economics, political theory and philosophy into regular law courses, the Law school curriculum was revised to reflect a realistic approach to law in its relation to forces in society. A "four-year college unit," comprising the last two years of high school and the first two of college, became a definite part of the university's new plan, and a curriculum was devised to provide a general education for students not interested in subsequent scholarship.

Charles R. Walgreen, Chicago business man, gave the university \$550,000 for the foundation of a chair for the study of American institutions. Construction of the Public Administration Clearing House building, to house the 17 associations of technical experts in governmental administration, made possible by a \$1,150,000 gift from the Spelman fund, was begun during the year. Reconstruction of Goodspeed hall for the art department, under funds provided by May and Leola Epstein, was completed.

The year closed with an accession figure of 1,196,118 bound library volumes, an increase of approximately 35,000 over July 1, 1936. President, Robert M. Hutchins, LL.D.

**Child Guidance:** see CHILD WELFARE.

**Child Labour.** In 1937, two States, North and South Carolina, passed laws fixing, with some limitations, sixteen as the general minimum age for employment. With these, ten States have now established by law sixteen as the age for employment: Ohio and Montana more than twenty years ago, Wisconsin and Utah in 1933, Connecticut and Pennsylvania in 1935, Rhode Island and New York in 1936. In all these States except Rhode Island the legal minimum age had been fourteen. There has been no addition in recent years to the very small group—California, Maine, Michigan, and Texas—which has for some years had a fifteen-year minimum age.



The movement for a Federal child labour law also gained great momentum in 1937. Two quite different proposals were before Congress. Senator Wheeler's bill introduced in the spring of 1937 followed the method utilized for excluding prison-made goods from a State, recently held constitutional by the Supreme Court. Under this proposal Congress would authorize a State to exclude goods produced by children in violation of its own child labour standards.

A second approach has been the prohibition of the shipment of the products of child labour in inter-state commerce, the decision of the Supreme Court in the Wagner Labor Relations Act having led to the belief that such a law might now be sustained. Two bills based on the power of Congress to regulate inter-state commerce were introduced in the Senate during 1937—one by Senator Barkley of Kentucky and the other by Senator Johnson of Colorado. The Labor Standards bill, known as the Black-Connery bill, providing for Federal wage and hour standards, utilizes both methods for the control of child labour—exclusion by the States of the products of child labour from other States and prohibition of their shipment in inter-state commerce.

In this bill, the minimum age under the regulation of inter-state commerce is sixteen for general employment and eighteen for hazardous occupations. In the Senate, the Wheeler-Johnson bill was substituted for the original child labour provisions of the Labor Standards bill, and some weakening amendments were adopted. The bill as amended passed the Senate, but great controversy developed over the wages and hours provision of the bill in the House; and failing to pass in the special session in December it was sent back to the labour committee of the House. There was little or no opposition to the child labour provisions.

The Sugar Act of 1937, Title III—Conditional-Payment Provisions—provides, in section 301, that for a producer to share in the payments made by the Government under the Act no child under fourteen years of age shall have been employed or permitted to work on his sugar farm and no child between 14 and 16 shall have been employed more than eight hours a day. An exception is made if the father of the child is the legal owner of not less than 40% of the farm crop at the time he was employed. This congressional prohibition carried a step farther the regulation begun under the Costigan Sugar Act of 1934, which permitted the secretary of agriculture to fix a minimum age in the contracts made with the farmers under the Act.

Current figures are not available for the nation as a whole as to changes in the number of working children under sixteen years of age. The last census (1930) showed less than 200,000 employed in non-agricultural occupations and more than 400,000 in agriculture. The numbers in manufacturing occupations have decreased greatly since 1930, especially during the period the NRA was in effect; but after that act was declared unconstitutional in May 1935, the numbers increased where new legal standards have not been adopted. The number of first working papers issued boys and girls of fourteen and fifteen in the States reporting to the Children's Bureau showed a decline from 10,244 in the first six months in 1936 to 4,899 in 1937.

If, however, only the States which have not adopted the sixteen-year minimum age are considered, there was an increase during these months in 1937 of 19% as compared with 1936.

The British *Ministry of Labour Gazette* for November 1937, gives the estimated number of insured boys and girls under sixteen years of age employed in Great Britain in occupations other than agriculture as 501,200 boys and 412,800 girls. Of this number 231,120 are employed in the distributive trades alone, 93,822 in the textile trades and 32,700 in mining. A recent report of a departmental committee on children in unregulated occupations estimates 125,000 in such occupations.

The number of working boys and girls under sixteen years of age seems to be at least five times as large in Great Britain as in the United States. The causes of this difference may be found in the fact that most children in Great Britain leave school when the legal age is reached while in the United States very large numbers remain in school beyond the legal working age and the fact that the legal minimum age is now two years higher in the more important industrial States of the United States than in Great Britain.

Following years of agitation for the raising of the school-leaving age an Education Act was passed by Parliament in 1936 raising the age from fourteen to fifteen years. This act does not, however, go into effect until Sept. 1, 1939, and even then local authorities will have the right to permit children fourteen years of age to leave school for what is described as "beneficial employment." (See also LABOUR LEGISLATION; AMERICAN BAR ASSOCIATION; CHILD WELFARE.) (G. AB.)

**Child Labour Amendment.** The proposed amendment to the Constitution of the United States, authorizing Congress to limit, regulate and prohibit the labour of persons under 18 years of age was submitted by Congress to the States for ratification in 1924. The amendment met with so much opposition in the States that by 1930 only five States had ratified it. In the depression dilemma, the attitude toward national control changed sharply, and by 1936, 26 States had ratified. Four States, Kansas, Kentucky, Nevada, and New Mexico were added to the list in 1937. In these States resolutions rejecting the amendment had been adopted in 1925 and 1926 respectively, and opponents of the amendment sought injunctions against certification of ratification to the United States secretary of State on the ground that the original action of the State legislatures was final and that the amendment was no longer pending—a reasonable time for ratification having elapsed.

On September 16 in the case of *Coleman v. Miller*, the Kansas Supreme Court decided that the amendment is still pending and that ratification on October 1 in the case of *Wise v. Chandler* after rejection is valid; while the Kentucky Court of Appeals sustaining both these contentions granted the injunction sought. This is a question which, if the necessary 36 States ratify, will undoubtedly be brought before the United States Supreme Court for decision.

In the spring of 1937 Senator Vandenberg of Michigan introduced a joint resolution proposing an amendment which would "empower Congress" to limit and prohibit the employment for hire of persons under 16 years "and require ratification within a seven-year period." While 16 is the minimum age now sought for general employment, the 18-year minimum has been urged for the extremely hazardous occupations and supporters of the original amendment are opposing the Vandenberg proposal. Although reported favourably by the Senate Judiciary Committee it did not come to a vote in 1937. (G. AB.)

**Children, Backward:** see BACKWARD CHILDREN.  
**Children, Gifted:** see GIFTED CHILDREN.

**Children's Books.** Publications during 1937 showed a wide variety in content and format, and an emphasis on fiction for older girls and fewer stories of adventure for boys. Picture books and others for younger children predominated. Production as a whole indicated greater recognition of the illustrator as contributor and closer co-operation between writer and artist.

Among picture books distinguished for text, illustration and design were *Animals of the Bible*, brief selections from the King



James version with full page lithograph drawings in black and white by Dorothy Lathrop, *Shawneen and the Gander* by Richard Bennett, *Walter the Lazy Mouse* by Marjorie Flack and *Four and Twenty Blackbirds*, nursery rhymes collected by Helen Dean Fish and illustrated by Robert Lawson.

Outstanding fiction included *Vinny Applegay* by Ethel Parton, *Petite Suzanne* by Marguerite de Angeli, *When Guns Thundered at Tripoli* by Charles Finger and *Trader's Children* by Laura Armer.

In the fields of folklore and legend were *The White Stag* by Kate Seredy, *Seven Simeons*, a Russian tale retold and pictured by Boris Artzbasheff and *Swords in the Dawn*, a fictionized version of the Hengist and Horsa epic by John O. Beaty.

History and biography were represented by *No Other White Men* by Julia Davis, *Mediaeval Days and Ways* by Gertrude Hartman, *The Lost Queen of Egypt* by Lucile Morrison and *The Boy Shelley* by Laura Benet.

*This Year: Next Year* by Walter de la Mare and Harold Jones was the only important contribution to children's poetry. May Lamberton Becker's *First Adventures in Reading* (1936) was brought out in slightly revised form in England with the title *Choosing Books for Children*. Books on science, hobbies and the arts were well represented.

Events of the year were the award of the John Newbery Medal by the Section for Library Work with Children of the American Library Association to Ruth Sawyer for her *Roller Skates* as the most distinguished contribution to American children's literature during 1936, the award by the English Library Association of a Carnegie Medal to Arthur Ransome for his *Pigeon Post* as the outstanding juvenile publication in England, and the gift by Frederick Melcher, the donor of the John Newbery Medal, of a Caldecott Medal to be awarded annually for the most distinguished American picture book. An important change in the Library of Congress, Washington, D.C., was the assembling in the rare book room of 7,000 children's books published prior to 1850.

Important bibliographies were *Children's Books from Foreign Languages*, a list of English translations prepared by Ruth A. Hill and Elsa de Bondeli and *The History of Children's Literature, a Syllabus with Selected Bibliographies* by Elva S. Smith.

Book fairs at which children's books were emphasized were held in London, Montreal, Toronto, New York, Boston and elsewhere. Books for children were a part of several of the national exhibits at the Paris Exposition. The total juvenile publications in 1937 (not including pamphlets, text books and new editions) were: United States 853, England 916 (including 11 translations). Many books of the year were published in both countries, simultaneously or at close intervals. (E. L. P.)

**Great Britain.**—A large number of excellent books for children, written by all kinds of people, from professors in the older universities to school-girls, appeared in England in 1937.

Arthur Ransome, who made his fame some years back with *Swallows and Amazons*, continues to be the most popular author among intelligent boys and girls from 10 to 18. In 1937 he gave them *We Didn't Mean to Go to Sea*, a story of adventure delightfully illustrated by himself with pictures of sailing and sailing boats. Two of the kind of children for whom, or about whom, Mr. Ransome writes have been inspired to make a book themselves. But *Far Distant Oxus*, by Katharine Hull and Pamela Whitlock, is not a mere imitation; story and pictures are full of originality, and they are put together with a skill that many older authors might envy.

Some publishers are trying to replace the unreal "adventure stories" once current by well-informed books about exciting deeds in many continents. The best example is perhaps *Carmen*, *Silent Partner*, by Chesley Kahmann, but other volumes in the same series are almost as good. The most attractive historical story



From "ANIMALS OF THE BIBLE" by Dorothy P. Lathrop

book for children in 1937 was Carola Oman's *Robin Hood*. It is taken from the 14th century *Lytell Geste*, and shows scholarly care, without any pedagogic heaviness to spoil the inimitable tales. An admirable story about the religious life of children in its relation to their daily life has been written from the Roman Catholic standpoint by Cecily Hallack, *Adventure of the Amethyst*. Good stories about modern middle-class children are: *John and Mary Abroad*, by Grace James, for children of six and seven; *Jane Versus Jonathan*, by Vera Barclay, for children of 10 to 12, and *Jam Tomorrow*, by Monica Redlich, for those of 12 and upwards. *The Family from One End Street*, by Eve Barnett, is a cheerful story about some very poor children.

Eleanor Farjeon remains supreme in her own line of fairy stories. *Martin Pippin in the Daisy Field* is a delicious poetic fantasy about village children and elves and the Sussex countryside. Olive Dehn's *Tales of the Taurus Mountains* have the classic fairytale atmosphere. *The Magic Poodle*, by B. G. and I. G. Williamson, and *Worzel Gummidge Again*, by Barbara Euphan Todd, are amusingly delightful tales about ordinary children's adventures with fairy characters in natural country surroundings. *From Seven to Eight*, by M. T. Candler, is an attractive book of the same type for younger children. Among books of short stories, the most witty is Prof. J. B. S. Haldane's *My Friend Mr. Leaky*. Among many clever picture books, the best is perhaps *Lucy Brown and Mr. Grimes*, by Edward Ardizzone. The children's book which seems to have given the greatest delight to people of all ages in 1937 is Prof. Tolkien's fascinating tale, *The Hobbit*, which leads one far away into lands of imaginative enchantment. (I. B. O'M.)

**Children's Bureau, United States:** see CHILD WELFARE.

**Child Welfare.** The year 1937 witnessed notable developments in child welfare in many countries, particularly regulation of child labour, protection of maternal and child health, and development of public administration of services for maternal and child health and child welfare.



The maternal mortality rate for 1935 was lower than that for 1934 in Australia, Canada, Chile, Czechoslovakia, England and Wales, Estonia, the Netherlands, New Zealand, Northern Ireland, Switzerland, and the United States. The lowest maternal death rates were those of the Netherlands and Italy—30 per 10,000 live births. The maternal mortality rate of the United States—58 per 10,000 live births—was the lowest ever recorded for that country, but it was higher than that of any of the other countries mentioned above. A national conference to consider ways of improving maternal and infant care was called by the chief of the U.S. Children's Bureau to meet Jan. 17-18, 1938. The infant mortality rate for 1935 was lower in Australia, Canada, Chile, Czechoslovakia, England and Wales, Latvia, Lithuania, the Netherlands, Scotland, and the United States. The rate for New Zealand—32 per 1,000 live births—remained unchanged and was lower than that of any of these countries.

During 1937 progress was made in the regulation of child labour through national and international action. The session of the International Labor Conference in June 1937 adopted two revised conventions raising the minimum age for entrance into industrial and non-industrial occupations from 14 to 15 years, providing protection from hazardous occupations for boys and girls of 16 and 17 years, and requiring that records of age be kept for minors under 18 years of age.

In the United States four States ratified the pending constitutional amendment that would give Congress the power to pass a Federal child-labour law; eight more States must ratify the proposed amendment before it can become effective. Two States passed laws making 16 years the minimum age for factory employment at any time and for any employment during school hours, bringing to 10 the number of States with a 16-year minimum-age standard. The remaining States, with one exception, have a minimum age of 14 or 15 years for such employment.

England placed upon the statute books after prolonged debate the new Factories Act reducing the maximum weekly working hours for children under 16 years of age from 48 to 44. Unsuccessful efforts were made in both Houses of Parliament to raise the minimum age for employment to 15 and to reduce working hours of minors under 18 to 40 a week. The education bill for Scotland, passed by the British Parliament, raised the school-leaving age in Scotland from 14 to 15 years, with exemptions for "beneficial" employment for children 14 years old, as did the British Education Act of 1936 for England, the effective date for both acts being Sept. 1, 1939. Norway's new labour law, effective Jan. 1, 1937, raised the minimum age for employment from 14 to 15 years and prohibited employment of persons over 15 years who are still required to attend school.

Considerable interest was manifested in child adoption and care of dependent children. A subcommittee of the Advisory Committee on Social Questions of the League of Nations continued work on a report on the placing of children in families, which is to have final consideration at a session in 1938. In England the departmental committee set up in January 1936 to investigate the methods pursued by adoption societies or other agencies engaged in arranging for the adoption of children presented a report proposing that all agencies concerned with adoption be licensed by the local authorities. Under the Adoption of Children Act orders for adoption rose from 2,943 in 1927 to 5,180 in 1936.

In the United States the Children's Bureau completed field work in a study of adoptions in 11 States. In connection with this study statistical analysis was undertaken for about 2,000 adoption petitions.

A number of countries set up national child-welfare agencies in 1937. Argentina created a Bureau of Maternal and Child Welfare by a law passed Dec. 31, 1936. Denmark, on May 22, 1937,

enacted legitimacy and maintenance laws replacing earlier statutes. In Finland, by a law effective Jan. 1, 1937, child-welfare work was reorganized under the general direction of a single agency. This was the first general child-welfare law enacted since Finland became independent. France, by presidential decree dated Sept. 30, 1937, set up a High Council for Child Welfare with the minister of public health as chairman. In Mexico a presidential decree effective July 1, 1937, established a Department of Social Aid to Children, to be in charge of health work for mothers and pre-school children and to supervise all agencies, public and private, national, State, and local. Sweden, by laws to become effective Jan. 1, 1938, provided for nation-wide maternal and child-health services and for Government aid to mothers during pregnancy and at childbirth, to unmarried mothers, to orphans, and to children whose parents are incapacitated for work. The newly created child-welfare agency of Venezuela made definite plans in 1937 for the first national child-welfare congress, to be held in Caracas in 1938.

The U.S. Children's Bureau, first public agency in the world created to consider as a whole the welfare of children, celebrated its twenty-fifth anniversary in 1937. It was also the first calendar year during which the States and the Federal Government, through Federal grants-in-aid administered by the Children's Bureau, co-operated under the Social Security Act in the development of services for maternal and child health, crippled children and child welfare. Marked progress was made in most of the States in the operation of all three programs. Several States passed laws establishing or reorganizing State departments of welfare, with a trend toward unifying such services as public assistance, relief, and child welfare. Many States clarified and strengthened the legal basis for co-operation with the Children's Bureau in services for maternal and child health, crippled children and child welfare, as well as with the Social Security Board in aid to dependent children. (K. F. L.)

**Chile**, a republic on the west coast of southern South America; language, Spanish; capital, Santiago; president, Arturo Alessandri; area, 289,776 sq.mi., with the country over 2,000mi. in length (from the tropical north to the sub-arctic south) and at no point more than 200mi. wide. The population was officially estimated at 4,530,051 in 1936. Chile has more Northern European elements in its population than any other Hispanic American country, with German-Chileans preponderant in some sections. The chief cities are: Santiago (827,910) and Valparaiso, the chief port (200,000).

**History.**—The Government is administered by a president and a cabinet which is partly under control of the congress. The year 1937 was marked by political instability, as the moderately Rightist Government of President Alessandri maintained itself with increasing difficulty against the growing dissatisfaction of left wing groups. The Conservatives and Liberals supported the president in Congress and furnished a majority of the cabinet. The so-called National Popular Front, linked with communists on the one hand and Nazis ("Nacistas") on the other, formed the opposition, while the disunited "middle of the road" radicals held the balance of power, with some favouring co-operation with the president, and some an accord with the left.

The early months of the year were fraught with political uncertainty, as the various parties manoeuvred for advantage in the March congressional elections. Increasing political activity and propaganda by the leftists led to the passage of an act restricting their activities and curtailing freedom of the press and of assembly, a signal Government victory. In February the proposal of an Internal Security Law which would give the president virtual dictatorial powers marked a line of cleavage for the congress-



sional elections. These, held on March 8 without major disorder, resulted generally in victory for the Government parties, although 3 Nazis and 7 communists gained seats.

The political tranquility expected to follow the elections failed to materialize. Two days after the elections, Gustavo Ross, foreign minister and minister of finance, an outstanding leader of the rightist groups, resigned, ostensibly because of President Alessandri's refusal to force resignation of radical and leftist cabinet members, but also due to growing popular resentment against him on account of increasing food prices, for which he was held responsible. For four years director of Chilean finances, during which time he had readjusted the nitrate industry, put exchange under control, and balanced the budget, Ross was accused of fostering a food shortage through his policy of encouraging exports to the United States, thus favouring the agriculturists and capitalists and sacrificing the interests of labour. To meet the food shortage, the Government adopted various measures to lower prices.

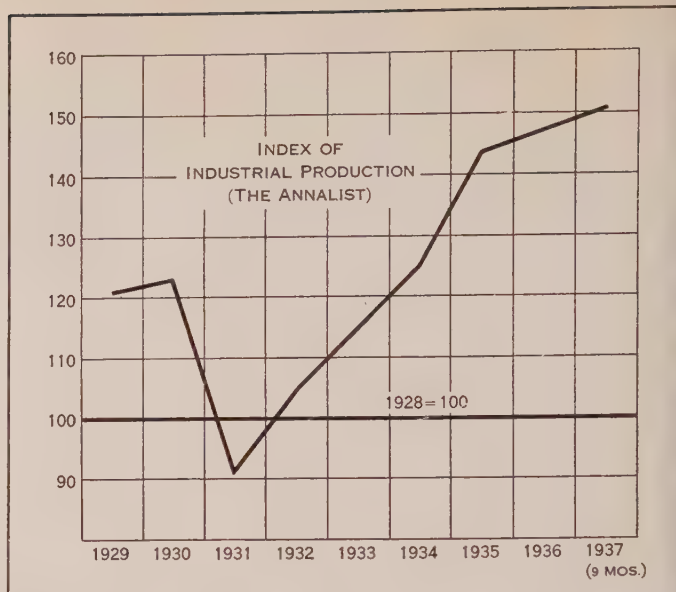
By May increasing Nazi activity became of serious concern to the Government. Many Nazis were arrested when tear gas bombs were thrown at President Alessandri on May 21, and frequent Nazi clashes with police occurred throughout the year, with a number of fatalities. To meet the Nazi threat the minister of the interior banned all mass meetings and the wearing of uniforms and insignia denoting group affiliation. In August, Congress was plunged into bitter debate when charges were made concerning German Nazi influences in Valdivia, centre of a considerable population of German extraction. A visit by Minister of Labour Bernardo Leighton to Valdivia brought denials from German educational institutions there that their educational policies were contrary to Chilean interest.

Toward the end of the year, the forthcoming presidential elections of 1938 began to dominate the political scene. In August, the Popular Front nominated a socialist, Colonel Marmaduke Grove, who had been provisional president for three days during the turbulent year 1932 and was regarded as an extremist. This was expected to bring about a liberal-radical coalition, while Gustavo Ross was considered the probable choice of the parties of the Right. In May the return, after six years of exile, of former president-dictator Carlos Ibáñez, the only Chilean retiring chief executive ever to flee the country, added complications. In October, Ibáñez announced his candidacy, asserting that Nazi support for him was constantly growing, and urged a program of social reform which would eliminate foreign economic imperialism.

In foreign relations the most outstanding development was a treaty with Bolivia in August, after months of conferences between economic experts of both nations. Included among its provisions were: authorization of a Bolivian customs station at Arica and unrestricted importation through Chilean territory; a most-favoured-nation clause, along with an agreement for the establishment of permanent trade commissions; and elaborate plans for stimulation of cultural exchanges between the two countries.

Earlier in the year a Chilean commission visited Japan at the expense of the Japanese Government to consider direct steamship service between Japan and Chile, and the development of an export trade to Japan of nitrate fertilizers, copper, and farm products, in return for Japanese merchandise.

Alarm over Argentine activities in the far south, in the vicinity of Tierra del Fuego and Magallanes, was aroused in June by an article in the newspaper *Aurora*, which asserted that Argentina was ambitious to seize Chilean territory, and pointed out increased Argentine military preparations, colonization efforts in Patagonia, military manoeuvres near the Chilean frontier, and the visit of Argentine livestock experts to frontier districts. Possibility that this article was inspired by a desire to win popular support for



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the government's program for development of the navy, the army, and the aviation corps was the explanation offered by foreign observers. Chilean concern over the growing obsolescence of her navy had been aroused earlier by the visit of the Argentine fleet in May, and following the *Aurora* article the Government exerted itself to improve the national defence. A heavy outlay for rapid naval improvement and for the purchase of military aeroplanes was begun. To defray these costs, for which no previous provision had been made, the sale of State lands was proposed.

**Trade and Communication.**—Chile has direct steamship connections with other parts of America and with Europe, and regular, frequent air transport service north to Panama and New York, and east to Buenos Aires. Railways connect the country with Bolivia and with Argentina. The main route to Argentina, the trans-Andean, has been closed to freight traffic since 1934, because of landslide damage, but funds for its reopening were authorized by the Argentine Government in 1937. Resumption of complete service is expected by late 1938. Within the country there is a railway system of approximately 5,540mi. and a 2,300mi. highway network. A highway program adopted in 1936 provides for the expenditure of 135,000,000 pesos on highway development from 1937 to 1940, with emphasis on the vicinity of Santiago and on the Southern provinces of the country. Communication with the far north and the far south is by boat and aeroplane.

In 1936 foreign trade showed a definite improvement which was, however, completely eclipsed by the gains of the first half of 1937. In 1936 the total trade was 23% of that of 1929; in the first half of 1937 it reached 43% of the comparable of 1929 figures. Imports (1936) were 346,700,000 pesos (84% manufactured articles), with Germany (29%), the United States (25%), and Great Britain (13%) leading. In the first half of 1937, despite a 2% increase in total volume, imports from Germany were less than 1% greater and those from Great Britain approximately 8% less, while imports from the United States had increased 24%, putting that country in the lead. Exports in 1936 were valued at 548,800,000 pesos, to the United States (17%), Great Britain (16%), and Germany (16%). The first half of 1937 showed a 91% increase over the corresponding period in 1936, with the chief gains to the United States. Mineral products comprised 75% of the 1936 exports, with copper (38.8%), nitrates (29%), iron ore, coal, and gold the chief items. Total value of mineral products exported in the first



half of 1937 was approximately 110% greater, with the greatest increase in copper. Non-mineral exports are: wool and frozen meats, and miscellaneous agricultural products, especially wine and cereals.

**Agriculture, Manufacturing and Minerals.**—Mineral production is principally copper and nitrates, with totals dependent upon foreign demands and consequently shifting greatly from year to year. In the first half of 1937 production reached its highest since 1929. Agriculture is the chief industry, with its products consumed largely within the country. Second in importance is manufacturing (almost entirely for domestic consumption), which employs 23.8% of the industrial population. Textiles are the principal manufactured product, with cement and electric power next. Considerable advance has been made within recent years. Livestock, principally sheep for wool and for meat, is important in the south. Tourist trade possibilities are just beginning to be developed in Chile.

**Finances.**—The monetary unit is the peso (value: approx. four cents U.S.). The national budget for 1937 was \$74,453,269.11. Primary education is free, non-sectarian, and compulsory.

**Education.**—In 1935 there were 4,345 primary schools (enrolment, 542,338), and 230 secondary (enrolment, 41,893). The 1937 budget allotted \$12,462,075.16 (16%) to education. The National university of Chile and the Catholic university, at Santiago, and the University of Concepción, at Concepción, are important.

**Army and Navy.**—Chile has obligatory military service, with a peacetime army of 21,000. The navy has declined in recent years, but a strong "big navy" movement was under way in 1937.

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**China,** a republic in East Asia, bounded on the north-east by Manchoukuo, on the north and west by Outer Mongolia, Siberia and Tibet, on the south by India, Burma and French Indo-China, on the east by the Pacific ocean. Capital, Nanking (temporarily removed to Chungking); president, Lin Sen. Excluding those areas over which no effective Chinese sovereignty has been exercised for many years (Manchoukuo, Outer Mongolia, Tibet) China has an area of 2,845,740 sq.mi. and a population of 418,479,000 (estimate of directorate of statistics in Nanking). No comprehensive census has ever been taken. Population of larger cities: Nanking (estimated, 1937), 1,000,000; Shanghai (foreign and Chinese administrative areas reckoned together, census of 1935), 3,490,762; Peiping, 1,487,289; Canton, 861,024; Hankow, 777,993; Tsingtao, 440,135. There are about 185,000 foreigners in China, including 74,000 Japanese, 64,500 Russians, 13,344 British, 8,637 Americans and 3,444 Germans.

**History.**—(For the Chinese-Japanese War, see that heading.) The ancient Imperial régime in China was overthrown by revolution in 1912 and a republic was proclaimed on Feb. 12, 1912. Experiments in Western parliamentarism were not successful and actual power over various parts of the country drifted more and more into the hands of generals, such as Wu Pei-fu, Chang Tso-lin, Feng Yu-hsiang and others. A new phase of China's history began when the capital was set up at Nanking after the campaigns of the period 1926–28 had established the Kuomintang (National People's Party) as the dominant political organization of the country and Chiang Kai-shek as its outstanding personality (see CHIANG KAI-SHEK and KUOMINTANG).

The Kuomintang is the sole legal political party in China and the national government derives its authority from the Kuomintang. There are no general elections; and the nearest approach to a representative body in China is the annual plenary session of the Kuomintang central executive committee and central super-

visory committee. The Government is composed of five yuans or departments, the functions of which are indicated by their titles: the executive, legislative, judicial, examination and control yuans. The Executive Yuan exercises general supervision over the ministries and commissions and its president is really the acting head of the Government. The president of the National Government possesses only titular powers. The Legislative and Judicial Yuans are concerned respectively with the drafting of laws and the administration of justice. The Examination Yuan is in charge of Government personnel matters and the Control Yuan exercises functions of general supervision and auditing. There is also a cabinet of ministers. The leading figure in the National Government throughout the last decade has been Marshal Chiang Kai-shek.

**Trade and Communications.**—China's imports amounted to 941,545,000 Chinese dollars and exports to 705,741,000 dollars in 1936. Exports were stimulated by the abandonment of the silver basis of the currency in 1935 and the depreciation of the Chinese dollar, which has since then been maintained at a rate close to 29.65 American cents. During the first eight months of 1937 imports were 785,620,291 dollars and exports 616,863,859 dollars, both showing an improvement over the preceding year. After August, however, there was a heavy decline in China's foreign trade as a result of the widespread hostilities with Japan. Imports through Shanghai, for instance, declined from 77,645,229 dollars in July to 28,162,294 dollars in August and to 7,319,714 dollars in September. Exports from the same port fell off from 52,890,654 dollars in July to 23,756,935 dollars in August. China's main exports are eggs and egg products, silk, cotton, wood-oil, ground-nuts, seeds of various kinds, tea and various ores and metals, including wolfram and antimony. Its main imports are metals, machinery, chemicals, dyes and paints, petroleum and tobacco.

China had between 6,000 and 7,000 miles of railways at the end of 1936 and a five-year plan for the construction of 5,300 additional miles after 1936. Highway construction, which had increased substantially during recent years, reached the figure of 56,000 miles in 1935. According to a report of the ministry of communications in 1931, China had 2,986 registered ships, with a tonnage of 431,892. China has no trans-oceanic shipping lines and much of the coastal shipping is in the hands of British and Japanese firms. A total of 87,755 ocean vessels entered and cleared at Chinese ports in 1936. British ships represented 16,000,000 tons; Japanese 9,500,000 and Chinese 7,300,000. The Government telephone system in 1935 served 21 cities and 62 others were served by private and provincial systems. About 250,000 telephones were in use. China has 53,000 miles of telegraph lines and several high-power radio installations.

The chief cities of China are linked up by air routes, which often serve as a substitute for non-existent rail connections. Commercial aviation is in the hands of the Sino-American China National Aviation Corporation and the Sino-German Eurasia Aviation Corporation. The aeroplanes of the former flew 1,955,801 km. and carried 10,404 passengers; while the latter carried 2,951 passengers and flew a distance of 744,735 km.

**Agriculture, Manufactures and Mining.**—China is an overwhelmingly agricultural country and is predominantly a land of small-scale farming. As many as 36% of its farms are less than 1.5 ac. in size, while 62% are less than 4.3 ac. Rice is the main crop and the main food in the southern and central part of the country, while wheat, millet, kaoliang and other grain crops are raised in the North. Animal husbandry is little practised, as there is little spare land for pasturing. China has fallen behind in the production of its traditional tea and silk because of lack of standardization and grading; efforts have been made recently to improve quality and increase output of tea, silk and cotton.

Coal is China's most important mineral. The geological survey





JAPANESE TROOPS entering the Yung Ting Gate to Peiping, China's ancient capital, August 8, 1937, after feeble defence and retreat by Chinese general, Sung Cheh-yuan

of China in 1934 estimated the country's coal reserves at 238,555,000,000 tons, of which more than half was in the mountainous north-western province of Shansi (now largely under Japanese occupation) and almost a third in the neighbouring Shen-si. China's annual output of coal is about 20,000,000 tons. China leads the world in the production of antimony and tungsten. It is very poor in other important sources of mineral wealth, in petroleum, iron, copper, gold and silver. Total deposits of iron are estimated at about 250,000,000 tons, of which about 90,000,000 tons are in Chahar province while a considerable part of the remainder is to be found in Hupeh and Anhwei provinces, in the valley of the Yangtze. Iron ore output is at the rate of about 2,000,000 tons a year. Manufacturing industry, in the modern sense of the term, is still in its infancy in China and is largely concentrated in a few large centres, such as Shanghai, Tientsin, Canton and Hankow. Cotton mills, silk filatures, flour mills, cigarette factories, cement works are among the most common types of industrial enterprises. The fighting in the Shanghai-Nanking area was a terrific blow to China's industrial development, since a great number of factories in the region were destroyed or badly damaged.

**Education and Religion.**—Estimates of illiteracy in China vary from 60–80%. Substantial progress in the educational field has, however, been registered since the establishment of the republic. There were 11,667,888 pupils in elementary schools in 1935, as against 2,793,633 in 1912 and the number of universities and colleges during the same period increased from four to eighty-two. There has been a special effort to spread adult literacy in the larger cities and in some selected rural districts. An aid in the promotion of elementary literacy has been the so-called "thousand character system," instituted by James Y. C. Yen, prominent Chinese social worker, who picked out the most frequently used of the thousands of hieroglyphs which make up the Chinese written language and prepared textbooks based on this simplified written language. China's main religions are Buddhism, Taoism and Confucianism. There are between 5,000,000 and 10,000,000 Mohammedans, mostly in the north-western and far western provinces of the country. There were 2,818,839 Catholics and 512,873 Protestants in China at the beginning of 1935. Missionary work in China has very considerably promoted educational and medical progress, as mission schools, colleges and hospitals have been built in many parts of the country.

**Finances and Banking.**—Under the stress of a rising world price of silver, which produced serious deflationary effects in China, the Government in November, 1935, abandoned the silver basis of the currency and put into effect a system of managed currency. This worked quite smoothly under peacetime conditions; but the war with Japan has exercised a serious detrimental effect on the whole Chinese financial structure. The unit of currency is the yuan, or dollar, which at the end of 1937 was worth 29.65. The budget for 1937–38 was balanced at 1,000,649,496 dollars, a slight increase over the preceding year. Military expenditures took up 39.2% and service on loan obligations 32.4% of the expenditure contemplated under the budget. The largest items on the revenue side were customs receipts (36.9%); the salt tax (22.85%) and the consolidated tax (17.55%), the latter a levy on trade and business. The three largest and most important banks in China are the Central Bank of China, the Bank of China and the Bank of Communications. There are also 14 Japanese and 19 other foreign banks which carry on business in China.

**Army and Navy.**—The peacetime strength of the Chinese army (estimate of the *China Year Book*, 1936) is 2,379,770 men, of whom 1,676,120 are listed as under the direct control of the central Government. There are 49 armies of varying degrees of strength. The majority of the Chinese troops are extremely backward as regards training, organization and equipment, although a number of modern divisions have been formed with the aid of a German military mission which has been resident in Nanking for some years. An air force has been developed with American and Italian technical aid and assistance. The Chinese navy, consisting of five cruisers and a number of gunboats and smaller vessels, total tonnage 41,000, is obsolete by modern standards and was unable to oppose any serious resistance to Japanese naval operations during the war in 1937–38. (See also CHINESE-JAPANESE WAR.)

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**Chinese-Japanese War,** the most serious international conflict that has occurred in the Far East since the Russo-Japanese War of 1904–05, began with a skirmish between Japanese troops, engaged in manoeuvres outside of Peiping, and a Chinese garrison post at the Marco-Polo bridge, fourteen miles southwest of Peiping, on the evening of July 7, 1937. Each side accused the other of firing the first shots; and an atmosphere of mutual suspicion and ill will paralyzed sub-



sequent efforts to settle the conflict as a mere local incident.

The Japanese Government on July 11 issued a statement to the effect that the gravity of the situation made it necessary to reinforce the Japanese garrison in North China with troops from Japan. Simultaneously there was some concentration of Chinese Central Government and provincial troops at Pao-ting-fu, the capital of Hopeh Province.

Despite these warlike preparations, efforts to reach a peaceful settlement were not altogether abandoned until the last week in July. Rumours of truce and agreement alternated with minor clashes. A more serious conflict took place at Langfang, a railway station between Peiping and Tientsin, on July 26, when the Japanese employed air bombing for the first time, as they alleged, to rescue a detachment of their troops which had been attacked by Chinese soldiers. The Chinese attributed the responsibility for the fight to the Japanese. On the evening of the same day Japanese troops were fired on when they were entering the Kwanganmen gate of Peiping.

Large scale fighting started on the 28th, when the Japanese Army launched a drive to push the Chinese troops from the environs of Peiping. Within a few days, despite a revolt of the Chinese police at Tientsin which seriously threatened the security of the small Japanese forces in that city, and a massacre of Japanese and Korean residents of T'ung-chow, the capital of the Japanese-dominated East Hopeh régime, Japanese military control of the Peiping-Tientsin area had been effectively established.

The outbreak of warfare in North China cannot be understood without some consideration of its underlying political causes. Ever since the occupation of Manchuria in 1931-32, the Japanese military authorities had exerted constant pressure on North China. Under the terms of the Tangku Truce, signed on May 30, 1933, a demilitarized zone was created in the region between the Great Wall and the frontier of Manchoukuo. In December, 1935, an independent régime, headed by Yin Ju-keng, was set up in this region, with the obvious support of the Japanese Army. Shortly afterwards a similar Japanese-dominated local administration was established in the Northern part of the Province of Chahar. Wholesale smuggling by Japanese and Koreans, exploiting extra-territorial privileges, was another grievance of the Chinese; the existence of this smuggling was confirmed by several statements by the British Inspector-General of Customs, Sir Frederick Maze. The Japanese garrison in North China, maintained under the provisions of the Boxer Protocol, was substantially increased in the spring of 1936, so that Japanese troops in this region outnumbered those of all other foreign nationalities put together.

During 1936 there was a notable resurgence of Chinese nationalism, accompanied by much agitation for resistance to Japanese encroachments. The most spectacular demonstration of this was the detention of Marshal Chiang Kai-shek, Generalissimo of the Chinese forces, at Si-an-fu for two weeks in December, 1936. Among the demands of his captors, Marshal Chang Hsueh-liang and General Yang Hu-cheng, were the cessation of civil war against the Communists and the organization of resistance to Japan. Chang Hsueh-liang and Yang Hu-cheng went into retirement after Chiang Kai-shek's release.

But the Nanking Government reached an informal agreement with the Chinese Communists, who discarded many of their social revolutionary ideas and put forward the idea of a united nationalist front against Japan. The Chinese Government systematically delayed consideration of two Japanese economic proposals for the development of North China with a combination of Japanese and Chinese capital. These were the construction of a railway from Shihchiachung to Tientsin and the exploitation of the Lungyen iron deposits, in Chahar.

In view of all these causes of friction and distrust, it is easy

to understand why a relatively slight initial clash assumed steadily more serious proportions. Each side felt that any concession would be interpreted by the other as a sign of weakness.

**North China Campaign.**—There was a lull of almost two weeks after the occupation of the Peiping-Tientsin area. Each side was busy with further military preparations, while some feeble and abortive peace talks took place between the more moderate representatives of the two countries. Large-scale warfare unmistakably got under way in the second week of August. A Japanese forward thrust against Nankou pass, on the Peiping-Suiyuan railway was quickly followed by the outbreak of fighting at Shang-hai. Subsequent hostilities, until the end of the year, were carried on in two main theatres, North China and the Lower Yangtze valley, although Japanese bombing aeroplanes carried out raids on towns far away from the immediate zones of hostilities, such as Canton, Nan-chang, Hankow and Lanchow-fu.

The Japanese operations in North China began with a movement to the North-west, along the line of the Peiping-Suiyuan railway. The Chinese offered resistance at Nankou pass, a strong natural position in the mountains and fighting here, which began on August 11, continued for more than a week. The Japanese carried out an encircling movement; and the position of the defenders of the pass was made more difficult by advance of some units of the Kwantung Army (the Japanese Army in occupation of Manchoukuo), which led to the occupation of Kalgan, the largest town in South Chahar, on August 25. By this time the defence of Nankou pass had been given up; and the subsequent Japanese advance to Paotou, western rail-head of the Peiping-Suiyuan railway, met with little resistance.

A political factor favoured the Japanese forward movement in this region. There had been perennial friction between the agricultural Chinese and the nomadic Mongols; and the latter, to a considerable extent, threw in their lot with the Japanese and co-operated with them. An autonomous Mongol State, headed by Prince Yun, with its capital at Kwei-hwa, was set up late in October. Its territory included Suiyuan and the Northern part of Chahar Province. The State has received a number of Japanese advisers.

The next Japanese military move took the form of a southward advance along the two main railway lines of North China, the Tientsin-Pu-kow and the Peiping-Hankow. By the end of September the Japanese had occupied Pao-ting, capital of Hopeh Province, on the Peiping-Hankow line, and Tsangchow, a large town on the Tientsin-Pu-kow line.

The main Japanese military effort in October was directed against mountainous Shansi Province, which was invaded from two directions, from the North and from the East, along the Shihchiachung-Tai-yuan railway. There was some fairly severe fighting in the North, where the mountains offered good natural lines of defence and the quality of the provincial troops was stiffened by an admixture of Central Government and Communist units. Ultimately, however, the converging movements of the Japanese troops were successful and Tai-yuan, the capital of Shansi Province, was occupied on November 8.

The Japanese advance southward along the Peiping-Hankow railway was pressed almost to the Yellow river, with the result that all of Hopeh and a part of Honan Province were conquered. Further to the east, along the Tientsin-Pu-kow railway, political considerations, combined with the barrier represented by the broad Yellow river in flood checked the Japanese advance in the Northern part of Shantung. It was hoped that the Governor of Shantung, General Han Fu-chu, if given sufficient time, would swing over to the Japanese side, and that the extensive Japanese property, valued at some 250,000,000 yen, located in Tsingtao, the chief port of Shantung, would be preserved intact if fighting were



avoided in this town. So all the 15,000 Japanese residents of Tsingtao were evacuated toward the end of August and Japanese property was sealed and placed in care of the local Chinese authorities. This attempt to safeguard Japanese property, however, was a failure. Beginning on the night of December 18, Chinese troops commenced to destroy textile mills and other Japanese property in Tsingtao.

Except for the part of Shantung which is south of the Yellow river, Japan's military objectives in North China had been substantially achieved by the end of the year. A political consequence of the Japanese military occupation was the organization, on December 14, of a new North China administration, headed by two elderly politicians who had formerly been associated with the so-called Anfu Clique, Wang Ko-min and Tang Er-ho. General Count Juichi Terauchi, Commander-in-chief of the Japanese Army in North China, assured the new régime of his support. Extensive Japanese plans for the development of North China's natural resources, especially coal, iron, salt, cotton and wool, and for railway building, electrical power installations and harbour construction have been drawn up, but are still in an embryonic stage of realization.

**Shanghai-Nanking Front.**—While the Japanese troops were carrying out the occupation of China's Northern provinces, fiercer and more spectacular fighting was raging around the cosmopolitan commercial metropolis of Shanghai. Tension in Shanghai began to mount on August 8, after a Japanese naval officer and soldier were killed by Chinese police near the Hungjao aerodrome. In this, as in most other details about the origin of the hostilities, there is a discrepancy between the Japanese and Chinese versions. The Japanese assert that the officer and sailor were killed without provocation; the Chinese state that they endeavoured to force entrance into the aerodrome.

The situation became increasingly threatening as the Chinese moved considerable forces of armed police into the zone which was supposed to be demilitarized after the Shanghai fighting of 1932, while new Japanese warships arrived off Shanghai. Actual skirmishing between Japanese and Chinese patrols started on August 13. On the following day Chinese aeroplanes went into action for the first time, endeavouring to bomb the Japanese flagship, "Idzumo," and other warships in the Whangpoo river. A major tragedy occurred when bombs, accidentally released from the aeroplanes, fell in two of the most crowded sections of the International Settlement, killing over 1,200 persons, the vast majority of whom were Chinese.

During the first ten days of fighting around Shanghai the Japanese were heavily outnumbered and were definitely on the defensive. Their naval landing party, supported by the guns of the warships, experienced difficulty in holding the Hongkew and Yangtzepoo sections of the International Settlement, where most of the Japanese live. The first Army units disembarked near Woosung on August 23. On the same day another accidental bombing tragedy occurred when an aerial torpedo apparently of Chinese origin, fell on the large Sincere department store, killing 173 and wounding over 500 persons.

After the arrival of the Army reinforcements the initiative on the Shanghai front passed into the hands of the Japanese. However, the Chinese, throwing into the action many of their well trained Central Government units, defended themselves with great stubbornness and courage. Except for one strategic retreat, carried out in good order, about the middle of September, the Chinese line, resting with its left flank on the Yangtze river and its right on the International Settlement held very firmly for two months, despite the marked superiority of the Japanese in aircraft and in artillery.

A decisive turning-point in the struggle came on October 25,

when the Japanese battered their way into the village of Tazang, key point in the Chinese defence line. This made necessary evacuation of Chapei, the main industrial section of the Chinese part of Shanghai, which was almost completely destroyed, partly by the heavy bombing and shelling to which it was subjected, partly by the fires which the Chinese set during their retreat.

**The Chinese Retreat.**—The attempt of the Chinese to make a new stand along Soochow creek near the western outskirts of the Settlements was shortlived, partly because their morale was depressed by the very heavy losses among their best divisions, partly because the Japanese threatened their right flank and rear by carrying out a landing near Chapoo, on Hangchow bay, early in November. By November 12 the Chinese were in full retreat from the environs of Shanghai.

Within a month the Japanese had swept over the stretch of 180 miles between Shanghai and Nanking. Strong intervening lines of defence, notably one running through Kiangyin and Wusih were abandoned with little resistance. The first real stand was made at the outskirts of Nanking; and several days of fighting were necessary before the Japanese completed the occupation of the Chinese capital on December 13. Wuhu, a town further up the Yangtze river, had already been taken.

**Results of the War.**—Judged from a purely military standpoint, the war up to the end of 1937 represented a clear-cut victory for Japan. Approximately 400,000 sq.mi. of Chinese territory had been occupied; the Japanese in the North had reached approximately the line of the Yellow river, while in Central China the Japanese flag flew over Nanking, the nationalist capital, and Shanghai, China's largest port and industrial centre. The Chinese air force had been largely put out of action, although the arrival of new aeroplanes from Russia was being reported in November and December.

Estimates of losses have been confused and contradictory; but it is doubtful whether Japan's casualties, in killed and wounded, during 1937 were much in excess of 100,000. Chinese losses were at least four or five times as heavy and were all the more keenly felt because it was largely the relatively good, modern trained units that were decimated in the fighting around Shanghai. One of the weakest spots in the Chinese preparation for war was the organization of military hospitals and care of the wounded. Con-



MAP OF EASTERN CHINA showing the Tientsin-Peiping and Shanghai-Nanking areas where fighting centred. It will be noticed that the two fronts are nearly 1,000 miles apart



# CHINESE-JAPANESE WAR

sequently an abnormally high percentage of the Chinese wounded either died or suffered permanent disability.

While the Chinese displayed more nationalist spirit and fought harder than in any previous clash with Japan, certain Japanese points of military superiority proved of decisive significance in determining the outcome of the operations during the first months of the war. The Japanese Army was a modern military organization, responsive to centralized command. The Chinese Army, on the other hand, was a heterogeneous combination of some fairly well equipped and trained divisions, subordinated to the Central Government, with masses of raw provincial levies, untrained in modern warfare and owing allegiance to individual "warlords," or governors of provinces, rather than to the Central Government.

Especially in the North, the semi-independent status of such provincial governors as Han Fu-chu, in Shantung, was an almost insuperable obstacle to the carrying out of a unified plan of defence. In the Shanghai-Nanking area, where the problem of the autonomous warlord was not so serious, the Chinese fought under the disadvantage of facing an opponent tremendously superior in artillery and air power. While the Chinese soldiers in many cases displayed great courage, holding their positions during days and weeks of heavy bombardment, the quality of their staff work and intelligence service was definitely inferior.

Japan's military victories by the end of the year had not led to the capitulation of the Chinese Government. The capital was transferred from Nanking to remote Chungking, in Szechuan, about the middle of November. Government offices were distributed among several towns, including Hankow, chief city of the Middle Yangtze and Chang-sha, in Hunan Province. Generalissimo Chiang Kai-shek issued several public statements professing an intention to fight to the end.

**International Aspects.**—Any war affecting China is almost certain to arouse international complications, because of the number and complexity of foreign interests in that country. Apart from questions of trade and investment, certain foreign loans are secured by assignments from the customs revenue; there are foreign residential areas, of which the International Settlement and the French Concession at Shanghai are the largest, which are not under Chinese administration.

The United States and those European countries which enjoy extra-territorial rights in China have stationed troops in Peiping and Tientsin under the terms of the Boxer Protocol and since 1927 several foreign powers have kept troops in Shanghai. It has also been a practice of American, British, French and other foreign warships and gunboats to stand off Chinese coastal and river ports to afford protection and refuge to their nationals in periods of stress and commotion.

The immediate reaction of the outside world to the outbreak of hostilities in North China was one of relative apathy and aloofness. The time was not propitious for foreign intervention. Great Britain was pre-occupied in Europe. The United States seemed committed to an isolationist foreign policy. The Soviet Union, by withdrawing troops from two disputed islets in the Amur river after one of its gunboats had been sunk by Japanese batteries, had given clear indication of unwillingness to fight, except in absolute self-defense.

The American Secretary of State, Mr. Cordell Hull, on July 16 issued a general statement of principles which America considered applicable to international affairs. Most governments expressed agreement with this statement, although Japan added a significant reservation, referring to "actual peculiar circumstances of the Far East."

On Aug. 26 the British Ambassador to China, Sir Hughe Montgomery Knatchbull-Hugessen, while motoring from Nanking to



MOTION PICTURE CAMERA records crash of bombing Japanese warplane (at right and above smoke cloud), shot down by Chinese at Nanking

Shanghai, was wounded by a machine-gun bullet fired from an aeroplane which British officials who were in the automobile described as Japanese. A British protest delivered to the Tokyo foreign office on Aug. 29 emphasized the general illegality and inhumanity of the act and requested an apology, punishment of the individuals responsible for the shooting and assurances against similar acts in the future. After a protracted investigation the Japanese Government, in a note of Sept. 20, admitted that "the incident may have been caused by Japanese planes which mistook the Ambassador's motorcar as a military bus or truck," expressed deep regret, promised "suitable steps" if the guilt of Japanese aviators should be established and declared that "instructions have been sent again to the Japanese forces in China to exercise the greatest care in safeguarding noncombatants."

The Advisory Committee of the League of Nations, created at the time of the dispute over Manchuria, condemned "the bombing of defenseless Chinese towns by Japanese aeroplanes" on Sept. 28. President Roosevelt in a speech at Chicago on Oct. 5 strongly condemned "aggressor nations" and urged "peaceloving nations to make a concerted effort in opposition to the violations of treaties."

On the following day the American State Department accused Japan of violating the Kellogg Pact and the Nine Power Treaty. The League of Nations Advisory Committee adopted a resolution to the same effect and proposed a conference of signatories of the Nine Power Pact.

This conference, held at Brussels during the first part of November, led to no positive results, because no delegation of the participating powers, except the Chinese, proposed any program of concrete action. Japan twice declined invitations to take part in the conference, adhering to its general principle of insisting



on a direct settlement of the conflict with China.

New serious international incidents occurred on Dec. 12. The United States gunboat "Panay" and Standard oil tanker were sunk in the Yangtze river by bombs dropped from Japanese naval aeroplanes. Three Americans and one Italian were killed and some fifteen were wounded. American feeling was further inflamed by reports of machine-gun fire from Japanese Army launches, directed against survivors who were escaping in boats. The Japanese Government offered apologies and indemnification and promised "to deal appropriately" with those responsible for the bombing. An American note, published on Dec. 15, demanded from the Japanese Government "an assurance that definite and specific steps will be taken which will insure that hereafter American nationals, interests and property in China will not be subjected to attack by any Japanese armed forces whatsoever." Shelling of the British warships "Ladybird" and "Bee" and of some British commercial vessels by Japanese shore batteries at Wuhu on the same day, Dec. 12, elicited a stiffly worded protest from the British Government.

The "Panay" case was settled after an exchange of notes between the Japanese and American Governments on Dec. 24 and 25. The American note accepted the Japanese expressions of regret and promises of indemnity, punishment of the guilty and intensified precautions against future incidents of this nature, while expressing belief in the findings of the United States Navy Court of Inquiry which was set up to investigate the matter. There were official complaints of depredations in American property in Nanking by Japanese troops in January; and the American consular official in charge of the embassy at Nanking, Mr. John M. Allison, was slapped by a Japanese soldier while investigating one of these cases on Jan. 26. American remonstrances were followed by official Japanese assurances of regret, investigation and punishment.

Japanese military activity, which subsided for a time after the capture of Nanking, was renewed with the crossing of the Yellow river and the occupation of Tsinan-fu, capital of Shantung province, on Dec. 26. Tsingtao, the most important port in Shantung, where the Chinese in December had destroyed Japanese mills valued at 250,000,000 yen, was taken on Jan. 11. Further Japanese activity during January consisted mainly of a northward push from Nanking and a southward push from Tsinan-fu along the line of the Tientsin-Pu-kow railway. The converging Japanese movement was directed against Hsueh-fu, an important junction point where the Lunghai railway intersects the Tientsin-Pu-kow railway.

Japanese peace offers to China through the medium of the German ambassador to China, Dr. Oskar P. Trautmann, yielded no positive results; and on Jan. 16, after a conference of high military and civilian officials in the presence of the emperor, the Japanese Government announced its intention to cease dealing with the Chinese National Government.

The Chinese ambassador, Mr. Hsu Shih-ying left Tokyo soon after this declaration.

The Japanese ambassador, Mr. Shigeru Kawagoe, returned to Japan from Shanghai.

(See also ARMIES OF THE WORLD; AUSTRALIA, COMMONWEALTH OF; History; CHIANG KAI-SHEK; CHINA; GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF; INTERNATIONAL LAW; War in China; JAPAN; NEUTRALITY; NINE-POWER CONFERENCE; ROMAN CATHOLIC CHURCH: Japan and Spain; SHIPPING, MERCHANT MARINE: War; UNITED STATES: Foreign Affairs.)

(W. H. CH.)

**Chinese Turkestan:** see SIN KIANG.

**Chosen:** see KOREA.

## Christian Science.

For the Christian Science movement, including its Mother Church, the First Church of Christ, Scientist, in Boston, Mass., and the branches throughout the world, 1937 was a period of steady progress. This was the case, not only in the United States, but also in other countries. In proportion to previous numbers, the movement had its largest growths last year in Australia and in Great Britain.

Mary Baker Eddy, having founded the original Church of Christ, Scientist, in Boston, in 1879, the number of Christian Scientists in the United States continues to exceed the number in all other countries, but within the United States the conspicuous growth of the Christian Science movement has moved westward from New England to the Pacific coast. Of the United States, California now has the largest number of Christian Scientists. In this State there are 274 Christian Science churches and societies, besides 11 organizations at colleges and universities, and not less than 1,990 Christian Scientists who make the practice of Christian Science Mind-healing their ministry or vocation.

In the United States and Canada, and to some extent in other countries, the Church of Christ, Scientist, has made an increased use of radio as a means of making Christian Science correctly known to the public. This broadcasting has included church services, devotional programs, the "Columbia Church of the Air," lectures, and transcribed interviews with prominent Christian Scientists. Likewise, *The Christian Science Monitor* has continued to develop its broadcast, "The Monitor Views the News," which consists of editorial comments on important news of general interest.

In Great Britain, the Earl Marshall summoned a delegate representing the Church of Christ, Scientist, to attend the coronation of King George VI and Queen Elizabeth. The delegate nominated by the Christian Science Board of Directors in Boston attended this ceremony with other religious representatives. In Germany, the Christian Science movement encountered more than a few difficulties made by the Hitler Government, but has continued a normal growth. First Church of Christ, Scientist, Berlin, completed and occupied its new edifice in 1937.

(C. P. S.)

**Christian X** (1870— ), King of Denmark and Iceland, K.G., nephew of Queen Alexandra of Great Britain, succeeded his father, Frederick VIII, in 1912, having been crown prince since 1906. One of the most democratic and popular of monarchs, a trained soldier, excellent shot, and experienced seaman, his silver jubilee was enthusiastically celebrated at Copenhagen and throughout his kingdoms and the Danish settlements in Greenland on May 15, 1937. The king married, in 1898, Alexandrine, Duchess of Mecklenburg, and by her has two sons.

**Chromite.** For a material with so diversified a list of uses, chromite showed an unexpectedly large depression drop in output, a decrease of 53% from a high of 635,000 metric tons in 1929 to a low of 298,500 tons in 1932; rapid expansion in new uses led to a quick recovery, and the 1934 output was only 5% below the 1929 high, while 1935 exceeded this by 28% for a high record of 813,000 tons; this in turn gave way for another record figure of 983,000 tons in 1936, and preliminary reports indicate that another record high may be made in 1937.

The feature of these new record figures is the increases in output shown by South Africa, Turkey, and the Soviet Union, while Cuba, Greece, Japan, and Yugoslavia have shown smaller gains. The rapid gains made in these countries have prevented Southern Rhodesia from regaining her former outstanding position, and while the New Caledonian output also still stands lower than in



World Production of Chromite  
(Metric tons)

	1929	1932	1934	1935	1936
Cuba . . . . .	53,799	500	50,160	48,509	71,086
Greece . . . . .	24,214	1,555	30,694	29,779	47,954
India . . . . .	50,361	18,190	21,921	39,753	59,276
Japan . . . . .	9,163	12,492	19,897	27,222	36,309
New Caledonia . . . . .	52,594	69,429	55,182	55,311	47,839
South Africa . . . . .	63,974	19,371	45,342	97,396	97,248
So. Rhodesia . . . . .	265,909	15,692	72,098	105,914	181,573
Turkey . . . . .	16,178	55,196	119,844	150,514	163,880
U. S. S. R. . . . .	52,889	62,100	131,100	184,400	220,000
Yugoslavia . . . . .	43,022	43,925	47,380	60,407	59,000
Total . . . . .	635,200	298,500	603,100	813,000	983,000

1929, accumulated stocks were drawn on in 1936, and exports showed an increase.

The chief factor leading to the increased outputs of the last few years is the rapidly increasing demand for chromium alloy steels, particularly the so-called stainless steels, and for non-ferrous chromium alloys, with some improvement also in the use of chromite refractories. (See also COBALT.)

The United States produces only a few hundred tons of chromite, but up to 1932 consumed well over half the world's output; since then the new developments have shifted more of the consumption to other steel-making countries, and the United States consumption has dropped to less than one-third of the total output.

(G. A. Ro.)

Chronology: see CALENDAR OF EVENTS, 1937, PAGES 1-14.

Church Membership. The religious bodies of the United States, as a whole, despite the economic recession of late 1937, show a steady increase in churches and membership. Government census statistics show that while the population growth of the nation has been .6 of 1%, the church membership growth has been an even 1%. Out of 87,160,604 citizens in the country, 51,745,907 persons, or 59.3% are members of churches and synagogues.

This of course does not mean 100% attendance at religious services, nor 100% support of religious organizations. The Northern Baptists, for instance, report that 23% of the members do all the work and that 54% of the members contribute nothing. The figures probably hold true for other larger Protestant denominations.

The Roman Catholic Church remains the largest in point of numbers, with a membership of over 20,000,000. The largest single Protestant denomination is the Southern Baptist group, with 4,482,315. Next year's figures will show the Methodist Church in first place among Protestants. The merging of the Methodist Episcopal, Methodist Episcopal South, and Methodist Protestant Churches will produce a membership of nearly 8,000,000.

The latest reports available list the churches and their memberships as follows:

Denominations (Over 50,000 members)	Churches	Members, All Classi- fications
Adventists, Seventh Day . . . . .	2,326	152,961
Assemblies of God . . . . .	3,444	173,349
Baptists, Northern . . . . .	7,616	1,476,330
Baptists, Southern . . . . .	24,671	4,482,315
Baptists, American Association . . . . .	2,662	263,484
Baptists, Nat'l Convention (Col.) . . . . .	22,000	3,650,044
Baptists, Free Will . . . . .	397	79,650
Baptists, Primitive . . . . .	2,700	103,125
Brethren, Conservative Dunkers . . . . .	1,026	161,503
Brethren, United . . . . .	2,850	410,897
Church of Christ, Scientist . . . . .	2,130	202,098
Church of God (Anderson, Ind.) . . . . .	1,338	82,893
Church of God in Christ (Col.) . . . . .	1,200	200,470
Church of the Nazarene . . . . .	2,255	133,516

Denominations (Over 50,000 members)	Churches	Members, All Classi- fications
Congregational and Christian . . . . .	6,048	1,010,776
Disciples of Christ . . . . .	8,105	1,602,052
Churches of Christ . . . . .	6,226	433,714
Episcopal, Protestant . . . . .	7,353	1,918,329
Eastern Orthodox: Greek . . . . .	255	289,000
Eastern Orthodox: Russian . . . . .	346	526,000
Eastern Orthodox: Serbian . . . . .	35	100,000
Eastern Orthodox: Syrian . . . . .	78	125,000
Eastern Separate: Armenian . . . . .	51	105,250
Evangelical . . . . .	1,959	234,257
Evangelical and Reformed . . . . .	2,934	849,205
Foursquare Gospel . . . . .	367	257,635
Friends (Orthodox) . . . . .	678	85,257
Jewish Congregations . . . . .	3,118	4,081,242
Latter Day Saints . . . . .	1,392	678,203
Latter Day Saints, Reorganized . . . . .	575	99,492
Lutheran, United . . . . .	3,718	1,523,022
Lutheran, American Conference . . . . .	6,322	1,441,615
Lutheran, Synodical Conference . . . . .	5,178	1,495,495
Methodist Episcopal . . . . .	24,421	4,700,000
Methodist Episcopal, South . . . . .	16,253	2,787,217
Methodist Episcopal, African . . . . .	7,115	650,000
Methodist Episcopal: African Zion . . . . .	4,205	597,785
Methodist Episcopal: Colored . . . . .	4,258	379,436
Methodist Protestant . . . . .	2,115	106,480
Polish National Catholic . . . . .	144	186,000
Presbyterian: Cumberland . . . . .	1,140	70,215
Presbyterian: United . . . . .	867	179,115
Presbyterian: U. S. (South) . . . . .	3,516	482,178
Presbyterian: U.S.A. . . . .	8,796	1,912,584
Reformed Christian . . . . .	286	117,972
Reformed in America . . . . .	720	240,660
Roman Catholic . . . . .	18,379	20,959,134
Salvation Army . . . . .	1,645	255,765
Unitarians . . . . .	376	98,600
Universalists . . . . .	543	51,159

Totals: . . . . . 239,211 80,800,786  
(Table by courtesy of Mr. Herman C. Weber, Editor,  
Yearbook of American Churches.)  
(F. S. ME.)

Great Britain.—Except in the cases covered by the notes hereto, the following table gives, to the nearest hundred, the membership of the various churches as officially stated in the annual reports or at the annual conferences of 1937.

Church of England . . . . .	2,382,900 (a)
Roman Catholics . . . . .	2,400,000 (b)
Presbyterian Churches:	
Scotland . . . . .	1,288,600
Wales . . . . .	182,200
Ireland . . . . .	113,800
England . . . . .	81,700
United Free, Scotland . . . . .	21,800
Baptists . . . . .	392,500
Baptists, Strict and Particular . . . . .	20,000
Congregational:	
Union of England and Wales . . . . .	424,800
Union of Scotland . . . . .	40,500
Union of Ireland . . . . .	2,200
Methodist Church . . . . .	829,000 (c)
Salvation Army . . . . .	222,100 (d)
Society of Friends . . . . .	19,300 (e)

- (a) Actual communicants, for England only, as at Easter, 1936.
- (b) The Catholic estimate of the total number of members of the Roman Catholic Church in England and Wales only.
- (c) Members and probationers in Great Britain.
- (d) Employees only, the vast majority of whom are unpaid; they include officers, cadets, missionaries, bandsmen, songsters, etc.
- (e) Membership in Great Britain only.

Church of England. In England only, the number of communicants at Easter, 1936 (the latest period for which statistics are available) numbered 2,382,857, a decrease of 59,086 on the total for the previous year. Pupils on the registers of Sunday schools numbered 1,546,007, a decrease of 82,688 and the largest falling off reported for five years. There were 12,681 incumbents, and the churches and mission buildings normally provided accommodation for 6,151,831 worshippers.

Qualified men and women on the electoral rolls of parishes totalled 3,559,926, a decrease of nearly 40,000 on 1935. It is of special interest to note that baptisms in 1935 were 57



per 1,000 live births, and that this proportion had in 1936 increased to 59, 382,882 infants being christened. Candidates for confirmation declined from 197,447 in 1935 to 182,738 in 1936.

Voluntary offerings actually raised by parish organizations and church collections entirely for parochial purposes amounted to £5,037,477, a decrease of £28,589 on the previous year. The budget of the central board of finance, approved by the church assembly at its summer session, provides for an estimated expenditure in 1938 of £145,000 for the general purposes of the Church of England, such as contributions to the clergy pensions scheme; grants for religious education; central loan fund, etc.

The diocesan boards of finance received the sum of £600,541 for the broad needs of the church in their respective dioceses.

In 1937, 19 churches were built or rebuilt and consecrated, partly as the result of the inauguration of the central loan fund. For the purposes of this fund credit facilities for £515,000 were obtained, and applications amounting to £501,160 were received from 29 dioceses. The dioceses are not asked to pay interest on the loans granted, but have to repay the capital sum borrowed in as short a time as possible, in any event within 20 years. The ecclesiastical commissioners are able to make a grant up to £10,000 a year for 20 years to be set against the interest charged by the bank on money advanced for the purposes of the central loan fund.

**Ecclesiastical Commission.**—The total number of poor benefices permanently augmented or endowed by the ecclesiastical commissioners out of their common fund has been increased to nearly 9,400 by grants secured during 1937. The total annual value of the additional provision for the cure of souls in parishes in England is now more than £2,354,000. The commissioners are faced with the prospect of serious reduction of income as a result of the tithe act and of the coal bill introduced on Nov. 10. The annual loss under these two proposals will be, it is estimated, nearly £200,000.

**The New Church House,** which is being built at Westminster, is making rapid progress, the foundation-stone having been laid by Queen Mary in June. Owing to the rebuilding, the church assembly has held its meetings at the Central hall, Westminster (Methodist). The library at Church house is to become a record office for the synodical and constitutional acts of the entire Anglican communion.

**Church and Films.**—The cinema Christian council entered into an agreement with the Religious Film Society, whereby the council will undertake the propaganda and advisory side of the



THE ARCHBISHOP OF CANTERBURY, primate of all England

work, leaving to the Religious Film Society the practical tasks of production and distribution. During 1937 a new organization, known as the Church Film Society, was formed.

**Church Assembly.**—Sessions of this, the national assembly of the Church of England, were held as usual in February, June, and November. Among the more important reports presented were the second report of the commission on the law relating to faculties, the first report of the commission on parochial endowments, and the report of the social and industrial commission on church and youth.

At the autumn session, the assembly decided on a policy of concentration for the training colleges for women teachers, whereby the colleges at Brighton, Truro, and Peterborough are to be closed.

**The Church and Marriage.**—This has been one of the chief questions of the year. It was discussed in January at the convocations of both Canterbury and York, the chief resolutions embodying the principle that, when two persons have contracted a legal marriage during the lifetime of a former partner of one of them, or of their former partners, they should not be baptized or allowed to partake of the Holy Communion until the parish priest has informed the bishop of the diocese of the facts. The bishop shall then give directions in writing as to whether the person or persons shall or shall not be repelled from the sacraments.

The question of the marriage of divorced people in church has also been discussed, and the church assembly, at its autumn session, welcomed "the considered judgment of the convocations concerning the inadmissibility of the use of the prayer book marriage service for the remarriage of any person whose original marriage has been civilly dissolved, but whose original spouse is, at the time of such proposed remarriage, still living." Sir Francis Acland, M.P., in December announced his intention of leaving the Church of England because of its attitude towards marriage. (See also *DIVORCE: Great Britain.*)

**Cathedral Commissioners.**—During the year 25 schemes framed by the cathedral commissioners were confirmed by orders in council, and a measure was promoted for dealing with the Cathedral Church of Southwark. The amount of assistance given to cathedrals out of the common fund of the ecclesiastical commissioners was £14,081.

**Religious Education.**—As the result of conferences held in January and July, an important policy was adopted for Sunday schools. This concerned a new approach in the teaching of "over-elevens" along the lines of methods used in the senior day schools with the development for those children of guilds, companies, or clubs. In November a scheme of home religious teaching by post was launched for children who do not attend Sunday school.

**Anniversaries.**—A service on the anniversary of the laying of the foundation-stone of Guildford cathedral was held by the archbishop of Canterbury in July, and Truro cathedral jubilee services took place in November. The 300th anniversary of the Ancient Society of College Youths (bellringers) was celebrated in London.

**Church Reunion.** If no tangible steps have been taken in the actual welding of churches in Great Britain, such as the blending of the Congregationalists, Presbyterians, and Methodists in the United Church of Canada, progress has yet been made in co-operation of effort between different denominations, especially on new housing estates—where an understanding is often reached between one body and another, and under the chairmanship of the Bishop of Southampton, a body known as The Friends of Reunion has been established, pledged to work for unity of the Christian Church.

At its annual assembly at Bristol, the Congregational Union (see *CONGREGATIONAL CHURCH*) discussed reunion and the possi-



bility of forming a united Oecumenical Church with Baptists and Presbyterians. The report of a special committee dealing with the subject was presented at the annual assembly of the Baptist Union at Manchester in April, but baptism itself raised one difficulty, and the method of administering the Communion another.

In July, a world conference on Church, Community, and State, presided over by the archbishop of Canterbury, took place in the Sheldonian theatre, Oxford, its object being to attempt to discover, by interchange of views among various sections of Christian thought, what are the main questions confronting the Church in the modern world. There were representatives from India, the United States, China, and many European countries.

The world conference of Faith and Order was held, under the presidency of the archbishop of York, in Edinburgh in August, when some 414 delegates from 122 Christian communions in 43 different countries met. Among those who attended were Chinese, Japanese, Indians, and Negroes.

A Parliament of religions—Christian, Moslem, Hindu, Parsi, Sikh, etc.—was held at Calcutta early in March. The president was Sir Brojendranath Seal; many countries, including Great Britain and the United States, were represented, the former by Sir Francis Younghusband and the latter by Colonel Lindbergh.

**Ciano, Galeazzo** (1903— ), Italian minister of foreign affairs since 1936, is the son of Count Costanza Ciano, a naval officer of note, former minister of communications, and president of the Chamber of Deputies.

The young Count started public life as a diplomatist, becoming secretary at one of the South American embassies, then consul-general at Shanghai; in 1934, he married Mussolini's daughter, and in the same year became minister of propaganda and press director, but from the outbreak of the Italo-Abyssinian War served in the air arm and became leader of the "Desperata" squadron of bombing planes, gaining a reputation for ruthless efficiency.

As foreign secretary, Count Ciano during 1937 was negotiator of many pacts and agreements (*see* ITALY) and took part in various "Non-intervention" discussions. In January, he was concerned in the Gentlemen's Agreement with Great Britain, and later in the same month had conversations with General Göring, the German air minister; in March, at Belgrade, he initialled a political agreement with Yugoslavia (*q.v.*), a trade agreement having been previously concluded; in May, he accompanied King Victor Emmanuel III on an official visit to Budapest, where, in conversations with the Hungarian ministers, the political and economic situation in central Europe was discussed and complete harmony attained; and in June he had conversations with Field-Marshal von Blomberg, the German war minister. On Nov. 6, with Herr von Ribbentrop (Germany) and Mr. Hotta (Japan), he signed the Anti-Communist Pact.

**Cigars and Cigarettes.** In the United States, details for the first nine months of 1937 show that the American consumption of cigarettes amounted to 123,336,525,174, an increase of 8,176,682,441 over the same period of the previous year. The per capita consumption of cigars is only .97lb. as compared with 1.33lbs. in 1900, but the total consumption is now 124,000,000lbs. as compared with 101,000,000 lbs. 37 years ago. Production figures for the first nine months of 1937 are given as 971,024,593, which show a gain of 199,651,252 over the same period of the previous year.

America's total per capita consumption of tobacco has, however, been on the down grade since 1920. At the moment the per capita figure in the United States is practically 7lbs. The chief feature in the British market during the year 1937 has been the steady and continuous growth in the amount of tobacco entered

for home consumption, amounting to 151,209,340lbs. for the ten months' period ending Oct. 31, as compared with 144,815,216lbs. and 137,062,993lbs. in the comparative periods of 1936 and 1935. Approximately 77% of this is consumed in the form of cigarettes, 99% of which are made exclusively from flue-cured tobacco imported from the United States, while the introduction of new 4d. brands of full-sized cigarettes containing a proportion of Empire leaf has been in a measure responsible for an increase in leaf imports from Empire countries. The per capita consumption is 3.71lbs., which is about the fourth highest rate of per capita consumption among European countries, although materially lower than the rate in the United States. Cigar consumption has gradually decreased, and today is only three-fifths of what it was 30 years ago.

In spite of a small recovery lately, cigars account for less than 1% of the total consumption.

All over the world a similar decline in cigar smoking is noted, the latest details from Havana showing that exports to all countries during the first eight months of 1937 were 24,380,740, as against 30,562,056 in the comparative period of 1936, while each year cigarettes, especially Virginia types, gain new converts, and all indications are that this movement will continue at the expense of other forms of smoking. (*See also* TOBACCO.) (D. L. H.)

**Cinema Industry:** *see* MOTION PICTURES.

**Cinnamon:** *see* SPICES.

**C.I.O.:** *see* COMMITTEE FOR INDUSTRIAL ORGANIZATION.

**Citrine, Sir Walter (McLennan),** K.B.E. (1877— ), British Trade Union official, born in Liverpool, started life as an electrician. A district secretary of the Electrical Trades Union from 1914, he became assistant general secretary in 1920, and in 1924 was elected assistant secretary of the Trades Union Congress, becoming secretary in 1926. Since 1928 he has also been president of the International Federation of Trade Unions (16,000,000 members), and its conference at Warsaw, July 1-3, 1937, was held under his chairmanship. Citrine is a director of the *Daily Herald*, a member of the Court of Governors of the London School of Economics, and chairman of the World Non-sectarian Anti-Nazi Council. He has written much about trade union and wider problems, his latest publication being *I Search for Truth in Russia*. He has travelled extensively for the furtherance of international trade unionism, twice visiting the United States to lecture.

One of the most polished speakers of British Trade Unionism, he is regarded in many quarters as its leading intellect. He was knighted 1935.

**Citrus Fruits:** *see* GRAPEFRUIT; LEMONS AND LIMES; ORANGES.

**City and Town Planning:** *see* TOWN AND CITY PLANNING.

**City Government:** *see* MUNICIPAL GOVERNMENT.

**City Museum, Sheffield, England:** *see* ART GALLERIES AND ART MUSEUMS.

**Civil List.** In Great Britain, the accession of a new sovereign in Dec. 1936 made necessary the introduction of a new civil list to provide for the maintenance and expenses of the Crown; this was done, after a select committee had issued a report (May 3), by the chancellor of the exchequer in the House of Commons on May 24; the bill was given a third reading on June 1, all amendments having been negatived, and on June 10 received the royal assent.

The total of the civil list itself remained at the same figure as that arranged for the previous Sovereign, Edward VIII, had he been married, and was made up as follows:



	£
His Majesty's privy purse.....	110,000
Household salaries and retired allowances.....	134,000
Expenses of household.....	152,800
Royal bounty, alms, etc.....	13,200
	<hr/> £410,000

The revenues of the Duchy of Cornwall which, in default of a Duke of Cornwall, are vested in the Crown, were estimated to amount in 1937 to £106,000; from this are paid the annuities of the Princess Elizabeth and the £10,000 granted to the Duke of Gloucester in addition to the £25,000 he receives as a younger son of George V, in respect of the duties he performs as representing the heir, the balance going to reduce the amount payable from the consolidated fund to the civil list.

Grants made to other members of the Royal family are as follows:

	£
H.M. Queen Mary.....	70,000
The Princess Elizabeth.....	6,000
The Duke of Gloucester.....	35,000
The Duke of Kent.....	25,000
The Princess Royal.....	6,000
The Princess Louise.....	6,000
The Duke of Connaught.....	25,000
The Princess Beatrice.....	6,000
H.M. the Queen of Norway.....	6,000

In the event of widowhood, H. M. Queen Elizabeth is to receive an annuity of £70,000, and the Princess Elizabeth, on attaining the age of 21, unless at that time there is a Duke of Cornwall living, an additional £9,000 per annum.

**Civil Population, Protection of.** The organization of the steps to be taken to protect the civil population of Great Britain in the event of air raids is entrusted to the Home Office, Air Raid Precautions department, which was set up, perhaps belatedly, in May 1935. The issue of warnings to the population, and the execution of the steps necessary to protect it, are the responsibilities of the local authorities, who will themselves be warned, when danger is impending, by civilian observers working from the air ministry's intelligence centre. There has been considerable delay in the final preparation of plans owing to a prolonged dispute between the Government and the local authorities as to the apportionment of the costs to be incurred, but at the close of the year Parliament had before it an air raids precaution bill to regulate this matter. In the meanwhile the department has not only worked out the organization of protection, but has also done a great deal of educative work in arranging courses of instruction in anti-gas treatment for doctors, police, and volunteers from the general public, and also in other aspects of "passive defence."

There are three types of danger to be met: high explosive bombs, wide-spread fires due to incendiary bombs, and the dropping of bombs containing poison gas or, alternatively, the spraying of poison gas from aeroplanes. The first problem is being virtually ignored on account of cost: the home secretary has stated in the House of Commons that the cost of erecting shelters against direct hits would be about £1,500,000,000; and the only precautions contemplated were against splinters. Public shelters are to be provided, and instructions about shelter-rooms to be issued to householders. The number of high-explosive bombs which an aeroplane can carry is limited; the more the population is dispersed, the safer it is, and one of the best precautions is to stay at home; and the official view appears to be that the incendiary bomb is the most universally dangerous. A medium bomber can carry enough incendiary bombs to start 150 separate simultaneous fires, and all the usual fire-fighting appliances fail, as water is useless

for the purpose till the contents of the bomb are exhausted. Four inches of reinforced concrete will provide safety, but apart from this, dry sand will prevent fires from spreading, and removal of inflammable materials from attics and top-floors is a valuable precaution. The official precautions will be to provide a hand-pump, a shovel, and a box of sand, and to send fire-fighting machines on frequent patrol.

Gas is the danger perhaps most widely feared. The first protective step is the provision of gas masks, which are completely effective except against the blister gases. Germany, unlike Great Britain, seems unlikely to provide the population with respirators on the score of expense. Further necessary steps to be taken are instruction in the use of protective clothing and in the preparation of gas-proof rooms (which, contrary to common opinion, can quite easily be improvised), while local authorities will organize properly trained decontamination squads to destroy persistent gases and to isolate contaminated areas. The steps taken cannot in any event be complete; they can only mitigate the danger, not remove it. And there are several problems unsolved, notably the question of the evacuation of civilians from dangerous areas, and the finding of a type of gas mask suitable for children under three. (See also **CHEMICAL WARFARE.**) (W. T. WE.)

**Civil Service.** The principal developments in civil service during 1937 included substantial extensions of the merit system in States and cities, balanced by the failure of Congress to fulfill platform pledges to extend the civil service of the Federal Government; the continued development of in-service training and placement programs, and public-service apprenticeships; the drive for public employee associations, especially in the State and local areas; the launching of a movement to establish professional standards for personnel administrators and technicians; and the recommendations of the President to replace the U.S. Civil Service Commission by a Personnel Administrator, to extend the merit system "upward, outward, and downward" and to develop civil service procedures toward a career service.

The public demand for extension of the merit system gained headway during 1937. Five States, Arkansas, Tennessee, Michigan, Connecticut and Maine, enacted State-wide civil service laws, the largest number to adopt the merit system in any single year in the history of merit legislation. In 29 States the newly organized unemployment compensation offices have been placed under the merit system and in most States also the bureaus of old-age assistance. The Civil Service Assembly reports that during the two-year period ending Dec. 31, 1936, 57 new city civil service commissions were established in addition to extensions under existing commissions. During 1937 28 cities and four counties adopted the merit system. Enabling legislation for city merit systems was enacted in North Dakota, South Dakota and Kansas; for police merit systems in Washington and West Virginia. Several notable appointments to key personnel positions in the States and the temporary loan of other technicians indicated a trend to waive the local residence rule. Within the States and their subdivisions, therefore, the extension of the merit system went forward on a substantial scale.

During the first session of the 75th Congress (January to August) and the special session (Nov. to Dec. 1937) the President's recommendations for extension of the merit system to all but policy-forming positions, including postmasters, were awaiting action. Not only did Congress fail to endorse the President's recommendations; but a number of laws were enacted increasing the number of patronage positions. The Housing bill became law exempting all positions paying more than \$1,980. On the other hand, the Labor department established a well-organized







relief bill. The city Administration transferred what funds it could to unemployment relief but at no time was sufficient cash available to care for all the needy.

**Banking and Finance.**—In the financial field, the outstanding event of 1937 was the change in ownership of the so-called Van Sweringen rail empire, consisting of the Chesapeake & Ohio, the Erie, the Nickel Plate and allied railroads. On March 8, George A. Ball of Muncie, Ind., owner of a controlling interest, transferred his shares to the George and Frances Ball Foundation which, on March 26, sold the shares to Robert P. Young and Frank F. Kolbe of New York and Allan P. Kirby of Wilkes-Barre, Pa., at a price of \$6,375,000. On April 5, Charles A. Bradley of Cleveland was elected president of the Alleghany Corp., top holding company of the Van Sweringen structure. The Interstate Commerce Commission, Dec. 29, approved the application of the Chesapeake & Ohio Railway Co. to acquire outright control of the Erie and the Nickel Plate railroads. On the same day, George D. Brooke of Cleveland was elected president of the Chesapeake & Ohio to succeed W. J. Harahan who had died on Dec. 14. The acquisition of the Erie and the Nickel Plate by the Chesapeake & Ohio conformed to the four-system plan promulgated by the Interstate Commerce Commission in 1932. It would bring under common control 9,287 mi., or 72.36%, of the Chesapeake & Ohio-Nickel Plate system proposed at that time by the commission.

Efforts to effect a satisfactory plan for the re-opening of the Union Trust Co. of Cleveland continued throughout the year. On Dec. 27, a list of 80 men who had consented to act as sponsors for the new bank, to be called the Union Bank of Commerce, was announced. Court approval of the plan was sought. Reorganization of the directorate of the Cleveland Railway Co., which operates the street car system of the city, was accomplished after all the directors had resigned on Sept. 10. The new board, which consisted of a majority of the old members, received the resignation of Paul Wilson, president of the company, on Sept. 24, and elected Frank R. Hanrahan as Wilson's successor on Oct. 8.

**Labour.**—Strikes, with attendant riots and other disorders, were numerous in Cleveland in the spring and summer of 1937. A strike of the van drivers on March 1 was followed by a series of others including those at the Fisher Body plant, May 13, and at the Industrial Rayon Plant on May 17. The C.I.O. lost the election in the latter strike, July 17, and a settlement was effected. Serious rioting occurred July 26 at the Corrigan-McKinney steel works where a strike was in progress, on Aug. 5 at the Bamberger Reinthal Knitting Mill and on Aug. 6 at the Cleveland Knitting Mills. Police and Ohio National Guardsmen were called upon to quell those disorders.

Investigations of charges of labour racketeering occupied the attention of the Director of Public Safety, Eliot Ness, much of the year. Harry Barrington, carpenters union business agent, was indicted by the grand jury on charges of extortion, March 15. Barrington was arrested in Los Angeles, Aug. 24, returned to Cleveland and pleaded guilty, Oct. 25. His sentence was one to five years in the State penitentiary. On Nov. 17, after four months devoted to the accumulation of evidence, Ness made it known that he had turned over to the county prosecutor's office, full details of charges that other labour union officials had threatened to tie up building projects in Cleveland unless they were paid various sums. Scores of business men testified before the grand jury which on Dec. 20 indicted four labour leaders.

Safety Director Ness' office also was active in the prosecution of police officers who had been accused of accepting bribes during the prohibition era. Deputy Police Inspector Edwin C. Burns was tried and convicted on five counts in indictments for receiving bribes for the protection of bootleggers. Police Lieut. John H.

Nebe was tried for bribery and found guilty. The convictions of Burns, Nebe and Police Captain Michael J. Harwood, who had been found guilty at a trial in 1936, were upheld by the fifth district court of appeals and their sentences to serve two to 20 years in the State penitentiary were confirmed. (P. By.)

**Climate:** see METEOROLOGY.

**Clothing Industry.** Developments in the clothing industry in 1937 revolved around two outstanding occurrences, the increases in production costs and greater unionization of all branches in the industry. This led to methods whereby the producer may economize, and, in consequence, the straight-line system, with its framework of time-saving motions and its corollary of simplification and quantity output at the lowest possible cost, saw wider adoption.

The straight-line system, providing for a continuous series of operations, one succeeding the other in an unbroken flow of cumulative work, undoubtedly played an important part in the spread of mass production in 1937. Its increased usage in that year may be held to be one of the major developments. In the acquisition of specialized, single motor machines, there was further indication of the direction which the clothing industry has taken. These specialized machines, in view of the fact that they can be shifted in the factory, provided that flexibility without which the straight-line system cannot function. But even more important, the machines laid a positive foundation for the scientific and accurate estimation of costs. They called into being those twin elements of quality and quantity absolutely indispensable to the successful completion of profitable mass production.

In consumer trends there was an increase in the use of cotton suits for summer wear, with a corresponding decrease in woollens and worsteds. A dwindling demand for boys' overcoats was compensated for by a shift on emphasis to Mackinaws; while an enormous acceleration in the demand for sportswear saw the prominence of such heretofore lagging items as ski suits.

Up to and including Nov. 1937, with only about 20% of the clothing industry in the United States reporting, 17,781,906 units wholly or partly of wool in men's, young men's, and boys' garments were cut. This compares with 21,173,194 units for a similar percentage of the industry for the entire year of 1936. Value of manufactured clothing reached \$1,125,000,000 in 1936, and for the period ending Nov. 1937, the value is close to \$1,000,000,000. On an estimated markup of from 33½ to 45%, retail value of the manufactured clothing in 1936 was more than \$2,000,000,000 of the total value of retail goods in the United States, and this figure is matched with a total estimated at \$1,500,000,000 up to and including Nov. 1937.

While the census of 1935 recently made public does not indicate the trend in England, increases in the production of the ready-mades is apparent in the Board of Labour's figures for persons aged 16-64 who have been insured against unemployment in the clothing trades. Taking July 1923 as 100, the figure was 113.7 in 1935 and 114.5 in 1936, the last year of record.

In the main, it may safely be maintained that the year 1937 saw more science and less guesswork in clothing production.

(H. SN.)

**Cloves:** see SPICES.

**Coal Industry.** The United States coal industry as a whole suffered a decline of 41% from the 1929 high, as a result of the depression, and in 1936 had recovered to 80% of the former high. These figures are in rather marked contrast with the industry in the rest of the world as a whole, which declined only 21%, and had recovered to practically its former level. The



following table gives the coal production between 1929 and 1936 for all States contributing more than 5,000,000 short tons, which combined account for about 95% of the total. Preliminary reports for 1937 indicate a bituminous output of 440,265,000 tons, as compared with 434,070,000 tons in 1936, an increase of 1.4%, while anthracite dropped 8.5% to 50,091,000 tons, against 54,760,000 tons in 1936; this gives a total output of 490,366,000 tons in 1937, against 488,830,000 tons in 1936, an increase of only 0.3%.

United States Production of Coal  
(Millions of Short Tons)

	1929	1932	1934	1935	1936
Alabama .....	17.9	7.9	9.1	8.5	11.7
Colorado .....	9.9	5.6	5.2	5.9	6.8
Illinois .....	60.7	33.5	41.3	44.5	50.5
Indiana .....	18.3	13.3	14.8	15.8	17.4
Kentucky .....	60.5	35.3	38.5	40.8	47.6
Ohio .....	23.7	13.9	20.7	21.2	23.0
Pennsylvania .....	143.5	74.8	89.8	91.4	108.5
Tennessee .....	5.4	3.5	4.1	4.1	5.1
Utah .....	5.1	2.9	2.4	2.9	3.2
Virginia .....	12.7	7.7	9.4	9.7	11.6
West Virginia .....	138.5	85.6	98.1	99.2	117.5
Wyoming .....	6.7	4.2	4.4	5.2	5.8
Others .....	32.1	21.5	21.6	23.2	25.4
Total Bituminous.....	535.0	309.7	359.4	372.4	434.1
Anthracite.....	73.8	49.9	57.2	52.2	54.8
Grand Total.....	608.8	359.6	416.5	424.5	488.8

Recovery in the bituminous industry has been fairly consistent since the low point of 1932, although the increase in 1937 was small, reflecting the recession in industrial activity during the latter part of the year; at the end of July production was over 10% ahead of 1936.

Anthracite made a good recovery up to 1934, since when conditions have been irregular, with the 1937 output down almost to the level of the 1932 low, due largely to increasing competition from oil and gas as household fuel.

Considering coal as a whole, Pennsylvania is the foremost producing State, but eliminating anthracite and comparing only on a bituminous basis, Pennsylvania has lost the leading position, and West Virginia has taken its place. These two States alone produce more than half of the total bituminous output of the United States. Distributed by fields, about 70% of the bituminous output comes from the Appalachian region (Pennsylvania, Ohio, West Virginia, Virginia, Eastern Kentucky and Tennessee), 20% from the Central region (Indiana, Illinois, Iowa, Missouri and Kansas), 6% from the Rocky Mountain and Western States, and 3% from the Southern field (Alabama).

Although there is some international trade in coal, the amounts are so small that practically the United States industry is self-contained; imports are usually under 1,000,000 tons and exports have ranged from a high of 24,000,000 tons in 1929 to a low of 10,000,000 tons in 1932, including bunker coal and the coal equivalent of coke exported.

Technologically, trends of importance are increases in stripping operations, mechanical loading, and mechanical cleaning, and improvements in safety conditions, reducing the fatality rate. Politically and economically the main feature of the year was the passage of the Guffey-Vinson Bill, the Bituminous Coal Act of 1937; little progress has been made as yet in the application of

the act, the full effect of which will not be felt until 1938.

(G. A. Ro.)

**Great Britain.**—The estimated output of coal for the year 1937, namely, 240 million tons, shows a very substantial increase over 1936.

This increase is due to a better home demand, especially by the heavy industries, and also to a small increase in the export trade.

Year	Output ooo Tons	Annual Change ooo Tons
1929. ....	258,000	..
1930. ....	244,000	—14,000
1931. ....	219,000	—15,000
1932. ....	209,000	—10,000
1933. ....	207,000	—2,000
1934. ....	221,000	+14,000
1935. ....	222,000	+1,000
1936. ....	228,000	+6,000
1937. ....	240,000	+12,000

It is well to remember, when considering the annual output of coal in Great Britain, that the science and art of coal utilization has made great strides in the past decade, and that the use of fuel oil has increased greatly.

For instance, in 1925 one ton of coal carbonized by a modern gas company produced 13,600 cu.ft. of illuminating gas, as well as 11.4gals. of tar, whereas today the figures are over 15,000 cu.ft. of gas and nearly 13gals. of tar. Since 1925 the quantity of electricity generated per ton of coal burned has been increased by 20%, and there has been at least a 10-15% increase in the efficiency of burning coal under boilers for steam-raising purposes. Therefore the annual amount of coal produced does not correctly indicate the relative state of trade over 10 years or more.

During the past 10 years there have been no great changes in the relative outputs from districts except in the exporting districts like Durham and South Wales, where a heavy drop occurred during the slump period.

In the older mining districts like Durham and the West of Scotland, many small mines have been abandoned, but the resulting loss in output has been overcome by the greater activity of the younger and larger mines. In other words, although the output from the various districts remains relatively constant, except where affected by trade conditions, there has been a definite shuffling within the districts themselves. This shuffling has been due partly to voluntary amalgamations within the districts as well as to the closing down of obsolescent mines.

During the year, there has been a steady increase in the number of men employed, the figures rising from 766,000 during the March quarter to over 780,000 for the last quarter of the year.

The principal increases have been in South Wales and Monmouth, Durham, and Scotland.

For the first time since 1929, there were more men employed in the second quarter of the year than in the first; usually the decline in the demand for household coal causes a diminution in labour in the Midland house-coal collieries.

The fact that the employment figures do not show any definite decline is interesting, in view of the extensive advances that are being made yearly in the use of machinery at the coal face.

The year 1937 has witnessed a definite expansion in the heavy industries, which is reflected in the increased demand for coal for home consumption.

The quota and supplementary allocations for imports of coal and other fuel into France reverted in the early months of the year to the level of the previous autumn, but were increased by 10% in March, during which month a new category known as the complementary quota was introduced.





BOOTLEG MINERS at work in Eastern Pennsylvania anthracite fields where 20,000 unemployed miners seized mining property and mined and sold about \$32,000,000 of coal annually

In Belgium the coal import licence tax was suspended and remained suspended on all coking coals throughout the year, but in May the quota restrictions were reimposed on other industrial and domestic coals.

The imports in the German customs area show little change, the increasing German demand for coal being met from other sources.

The export of coal to Italy was resumed in Jan. 1937, and

reached a figure of over 2,000,000 tons by the end of the year, as compared with 60,000 tons the previous year.

The Spanish trade dropped, in spite of the import duties being reduced at ports controlled by the Valencia Government.

The average declared value of coal sold has risen during the year from 14s. 7½d. per ton to 15s. 8d. This rise has been reflected both in the home and the export markets. The rise in the price of export coal was not pronounced in the early part of the year, but substantial increase took place in the later half, there being an average rise of 3s. per ton in Best Durham Gas Coal and 1s. 6d. in South Wales Large Steam in June and July.

An increase in price has also taken place in industrial coal, particularly in that supplied to public utility undertakings.

During the year under review substantial increases in wages became operative in most districts, due to percentages above the minimum being paid on the miner's basic wage in more than half the producing districts. It will be remembered that a miner's wages fluctuate with the prosperity of the industry. The principle is that, after certain definite items of cost have been taken into account, any difference between these and the realized value of the product is divided between owners and their employees in the proportion of 20 to 80. The employees are protected against very low wages in times of trade depression by the provision of a fixed minimum percentage addition to their basic wage.

In addition, new wages agreements were amicably negotiated in South Wales, Durham, Northumberland, North Derbyshire, and Yorkshire, whereby the majority of the employees obtained higher wages and/or an improvement in conditions of employment.

The average cash earnings per shift of all classes throughout the coalfields are estimated at 10s. 9d., or 9d. more than a year ago.

During the year there has been a decided rise in the price of colliery stores, especially timber and steel. The increased cost of pit timber, which comes principally from the Baltic, Scandinavia, and France, is partly accounted for by the rise in freights.

During the present year installation of underground machinery has continued its upward trend, and approximately 60% of the coal mined in Great Britain is now undercut by coal-cutting machines as compared with 31% in 1930. The increase applies to underground conveyors, the figure having risen from 17% in 1931 to 53% in 1937.

A steady rate of advance is also noticed in the provision of coal-cleaning plants. Thirty per cent of the total coal mined was washed in 1930, and today the percentage is 46%, the number of washeries increasing from 685 to 780, and in addition many of the existing washers have been enlarged.

The method of cleaning by water concentration being first in the field obtained a good start over the dry-cleaning process, but during the past few years the rate of installation of both types has been relatively the same, though on the whole wet washers have had a larger capacity.

During the year, the Royal Commission on Safety in Mines has concluded the hearing of evidence, and is at present considering its report. On the findings of this commission will be based a new act to replace the Coal Mines Regulation Act, 1911.

In addition, H. M. Government presented to Parliament in November the Coal bill, 1937. This bill is in four parts: (1) the unification of coal royalties under the ownership and control of a Coal Commission; (2) provision for the furtherance of reorganization in the industry by transferring to the new Coal Commission the functions of the Coal Mines Reorganization Commission, and by varying the powers of compulsory amalgamation given to the latter body by the Coal Mines Act, 1930; (3) extension to the end of 1942 of the duration of part I of the act of 1930, which is



## COAXIAL CABLES—COBALT

the statutory basis of the organized selling schemes, including certain amendments to strengthen the protection of the interests of consumers; (4) miscellaneous and general provisions.

In part I, it is suggested that a sum of £66.45 millions be granted as compensation to royalty owners, and that this sum be allocated by a central valuation board assisted by various regional boards. In part II the new Coal Commission is directed to endeavour to reduce the number of coal-mining leases where they think it desirable in the interests of efficiency. No compulsory amalgamations can be forced on to the industry until the Board of Trade has made an order to this effect, and the order has been laid before both Houses of Parliament in draft for 28 sitting days.

**World Production.**—Of the various grades of coal, anthracite, which is rich in carbon, low in volatile matter, and geologically of the Carboniferous period (see *Encyclopædia Britannica*, vol. 5, p. 868 *et seq.*), is of the highest "rank," but the least plentiful; while lignite, which is soft, high in ash and moisture, and geologically of the Secondary and Tertiary Eras, is generally of a low grade, but is far more abundant, the estimated coal reserves known to the world today being of the order: anthracite 500,000 million tons, bituminous 4,000,000 million tons, lignite 8,000,000 million tons.

In Great Britain, and many of the larger coal-producing countries, the coal is mainly Carboniferous, of high "rank" as determined by calorific values. On the other hand, Germany, Russia, central Europe, North America, British India, South Africa, and Victoria contain large deposits of a younger age than the Carboniferous.

The superficial extent of the coal areas of the world has been estimated at 605,000 sq.mi., or in the ratio of 1 to 110 of the land surface of the globe, about one-third belonging to formations newer than Carboniferous. Coal is found in all latitudes between Spitzbergen and the Antarctic continent, and is of better quality as a whole in the Old World than in the New, also coal of the Northern hemisphere is superior to that of the Southern.<sup>1</sup>

<sup>1</sup> Walcot Gibson, *Coal in Great Britain*.

**Germany.**—Germany, whose known coal reserves are the largest in Europe, is the world's second largest producer of coal, including lignite, and the largest producer of lignite itself. The

bituminous coal districts of Germany are mainly in the Rhine provinces; the Saar district is close to the iron-ore deposits of Germany and France, the Rhine districts are in the heart of industrial Germany, while the output of Upper Silesia, the second most important field, is used both internally and for export. The German output is of the order of 300 million tons per annum, half of which is lignite, and 20 to 25 million tons is exported to France and other European countries.

**U.S.S.R. (Russia).**—The production of coal in the Union of Soviet Socialist Republics has shown an increase unparalleled among the world's larger coal producers. The largest producing coalfield is the Donets basin of the south-eastern Ukraine, which is well equipped with railroads and readily accessible to the Black sea, and provides about 75% of the coal mined in the U.S.S.R. Both anthracite and bituminous coal are produced. An extensive lignite deposit is being developed south and west of Moscow to supply the industrial needs of that centre. One of the largest coal deposits in the world is situated in Central Siberia, the Kuznetsk basin, but it has not yet been developed to any great extent.

**France.**—France, though a large producer, is short of coal, and is therefore also a large importer. The most important coalfield is that of the Pas de Calais, centred round Valenciennes, Mons, and Lens. During the World War, 1914–18, this coalfield was occupied by the Germans, and at the end of the War they destroyed the mines. As part of the reparation payment, the mines were re-equipped and are now modernized. There are a number of other coalfields, but the coal generally is of a low rank.

**Poland.**—The main Polish coalfield borders on Silesia, and was ceded to Poland at the end of the War. The field has been extensively worked and, by reason of the Polish Corridor and State-subsidized railways, Polish coal has become a serious competitor with the older coal-exporting countries, especially in countries bordering on the Baltic.

**Japan.**—Japan is a large consumer of coal, but is none too well provided with commercial deposits. There are, however, large deposits in Manchuria, especially at Fushun, which are controlled by the South Manchurian railway and subject to Japanese influence.

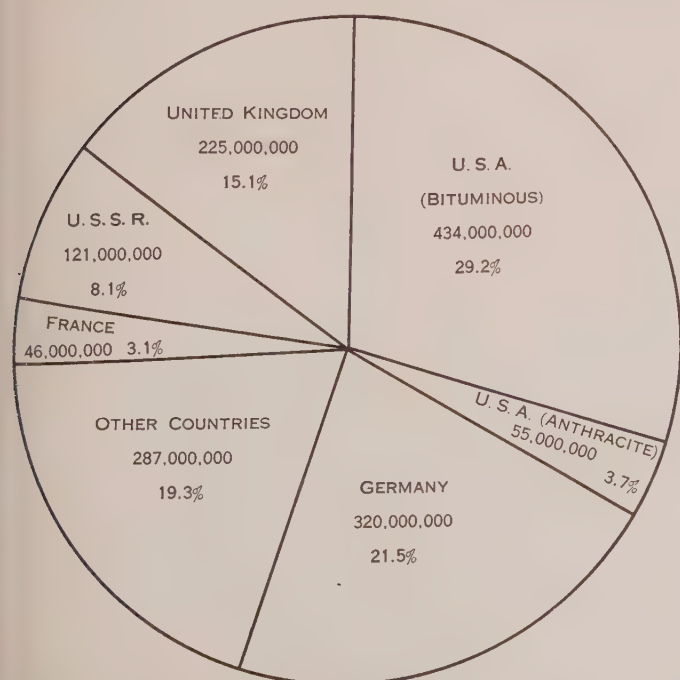
**South Africa.**—There are extensive coalfields in Natal, the Transvaal, and Southern Rhodesia. The Transvaal fields are in close proximity to the Witwatersrand goldfield; in fact, some of the present gold-mines in the East Rand are situated on the site of old coal-mines. The main field at Witbank is 100 mi. from Johannesburg. The Southern Rhodesian coalfield at Wankie has co-operated very materially in developing the copper-fields of Northern Rhodesia.

**Australia.**—The more important coalfield in Australia is in New South Wales, and centres round Newcastle. A large lignite deposit is being worked in Victoria.

It will be gathered from this short review that supplies of coal are available over a wide area of the earth's surface, but it will also be noted that the most progressive countries today are those possessing ample resources of coal which are being extensively exploited. (J. A. S. R.)

**Coaxial Cables:** see ELECTRICAL ENGINEERING.

**Cobalt.** There was no great commercial importance attached to the metal cobalt until the early years of the nineteen hundreds, when extensive deposits were discovered in Ontario (Canada), which yielded a plentiful supply of a metal heretofore obtained only in small quantities as a by-product in the smelting of other metals, and stimulated the development of new uses. For a time Canada supplied most of the world's demand, but more recently even more extensive deposits have been dis-



WORLD PRODUCTION OF COAL in 1936 (1,488,000,000 metric tons), showing amounts mined in principal producing countries



covered in Northern Rhodesia, Belgian Congo and French Morocco, with the result that the Canadian output has dropped to about 20% of the total. The metal is now produced to the extent of about 2,000 metric tons annually, about half of which is used as metal, and the other half in compound form. The chief metal use is in the so-called stellite alloys, combinations of cobalt and chromium, with sometimes other metals added, and in special alloy steels, mainly for permanent magnets. The main compound utilized is the oxide, which has long been used as a blue colouring agent in the glass and ceramic industries, while smaller amounts of other compounds are used as driers in paint and varnish. (See also CHROMITE.) (G. A. Ro.)

**Coburn, Ivah Wills** (?-1937) American actress, wife of Charles D. Coburn with whom she had appeared in many productions following their marriage in 1906. She had made her Broadway debut four years previously with Julia Marlowe and E. H. Sothern in *Hamlet*. On the formation of the Coburn Shakespearean Players in 1907, she continued to enact leading Shakespearean female rôles during the next ten years. She and her husband also appeared in such Greek and French classics as *Electra* and *The Imaginary Invalid*. One of their greatest successes, *The Yellow Jacket*, was originally produced in 1916 and was revived from time to time. Their later appearances included *So This Is London* (1922-24), *The Farmer's Wife* (1924), *The Plutocrat* (1930) and *Lysistrata* (1930). In 1935 and 1936, they directed the Mohawk Dramatic Festival at Union college. Mrs. Coburn died in New York city, April 27, 1937.

**Cochin-China:** see FRENCH INDO-CHINA.

**Cocoa.** (CACAO). From a high, thirteen-cent level in New York, in Jan. 1937, world cocoa prices dropped almost continuously throughout the year to extreme lows and culminated in November in a concerted movement of Gold Coast and Togoland (West Africa) growers to withhold the remainder of the 1937-38 crop from the market until prices improved. This policy was firmly maintained through November and December and promised to extend well into 1938, with reluctance of Brazilian growers to sell reflecting a similar attitude.

As of Nov. 1, reports by the International Institute of Agriculture indicate that Gold Coast and Togoland production, which is harvested through the seven months of August to February, was as follows: Ashanti, 11,300,000lbs. marketed, 42,600,000lbs. in farmers' hands. Western Province, 2,700,000lbs. sold, 4,900,000lbs. withheld. Central Province, 8,500,000lbs. sold, 18,600,000lbs. withheld. Eastern Province, 33,600,000lbs. sold, 42,600,000lbs. in farmers' hands. Trans-Volta, 3,600,000lbs. sold, 4,300,000lbs. withheld. The 1937-38 production in Brazil was estimated by the Cacao Institute of Bahia as 2,646,000 centals. Haitian exports for the current year were 31,600 centals, compared to 36,200 the previous season. No comprehensive figures are available for Nigeria, Surinam and Trinidad.

(S. O. R.)

**Coco-Nuts.** The world's coco-nut industry, which centres mainly in an annual production of about 1,000,000 tons of exportable coco-nut oil, was materially affected by a Supreme Court decision and three crop developments in 1937, all in the United States. On May 2 the U.S. Supreme Court handed down a unanimous decision upholding the constitutionality of the Revenue Act of 1934 in which an excise tax of three cents a pound was imposed on the first domestic processing of coco-nut oil from the Philippine Islands. The act was attacked in court



A COFFEE NURSERY where a selection is made of the healthiest plants

by two U.S. soap companies which contended that it was similar to the Agricultural Adjustment Administration's processing taxes, which the court had declared unconstitutional. The court ruled that Congress had authority to levy the tax for revenue and with the collateral purpose of protecting certain industries in the country. The decision recited that the Philippines were in a sense wards of the United States, although having been granted conditional independence, and that Congress had a right to enact the law, which might be burdensome to the Philippines and then provide that the amount of the revenue so collected should be paid to the Philippine treasury in recognition of a national duty not to impose a burdensome tariff that might injure the Philippines.

The 1937 bumper corn crop in the U.S. also affected the coco-nut oil industry throughout the tropics because it meant abundant feed for hogs and, therefore, a larger production of lard, which competes with coco-nut oil in the composition of oleomargarine, cooking fats and other edible compounds. The number of hogs in the U.S. increased from 42,948,000 in 1936 to 44,418,000 in 1937. In addition the record U.S. cotton crop of 1937 provided further competition against imports of coco-nut oil in that cottonseed oil is used also in the manufacture of oleomargarine, cooking fats and other edible compounds and also competes in the manufacture of soap.

Coco-nut oil is such an important product in international trade that it is shipped from the Philippines to the United States in tank steamers, although from many producing countries it is exported in the more expensive manner, in drums and barrels. It is one of the leading four of some 20 vegetable oils and three animal fats used somewhat interchangeably throughout the world as food, in the manufacture of soap and as drying agents in paints. (See VEGETABLE OILS AND ANIMAL FATS.) The average annual production of exportable coco-nut oil was placed at about 940,450 tons by Dr. Reginald Child, director of the Ceylon Coco-nut Research Scheme, in an address to Ceylon coco-nut growers in October, 1937. Dr. Child placed the average annual exportable production of other oils that compete with coco-nut oil at approximately: cottonseed oil, 1,044,000 tons; groundnut oil, 1,010,000 tons; olive oil, 800,000 tons; linseed oil, 750,000 tons; soybean oil, 618,000 tons; sunflower seed oil, 375,000 tons; palm oil, 330,000 tons; palm kernel oil, 231,000 tons; rapeseed oil, 280,000 tons; tung oil, 65,000 tons; maize (corn) oil, 35,000 tons; castor bean oil, 58,800 tons; hempseed oil, 10,500 tons; other vegetable oils, 60,000 tons; a total annual production of 5,788,500 tons of vegetable oils. The animal fats, excluding butter, that compete with coco-nut and other vegetable oils are lard,



tallow and whale oil. Average annual exportable production was placed at about 400,000 tons each for lard and whale oil and 320,000 tons for tallow.

(S. O. R.)

**Codeball**, which had its beginning in the U.S. eight years ago under the jurisdiction of the Amateur Athletic Union, now occupies a conspicuous place among sports in every section of the country. This combination game of golf and soccer is played indoors and out by many thousands of enthusiasts in gymnasiums, schools, camps, parks, playgrounds, hospitals, and private homes.

The chief event last year in codeball on the court was its fifth national A.A.U. championship, held in Chicago, where eighty top-notch players took part. George Webster, of Chicago, won the championship by defeating Al Topp, Jr.; C. A. Sippel, third, and Russel Larsen, fourth.

Codeball on the green, the outdoor version of the game, held its national A.A.U. championship tourney in Forest park, St. Louis, Mo. The men's championship was won by Lou Murphy with a score of 58, equalling the course record made in 1936. Martin Dooling was runner-up; Jim Cowhey, third. The title in the women's division was won by Miss Erville Droll; Miss Edne Gustavson, second, and Miss Marie Bean, third. William E. Code, M.D., the originator of the game, is chairman of the national codeball committee of the A.A.U.

(J. B. P.)

**Coffee.** Overproduction continued during 1937, as in most of the previous 30 years, to be the great problem of coffee growers. On July 1 there was a carry-over estimated at 30,451,000 bags of 132lbs. to the bag. Of this 28,069,000 bags were Brazilian coffee and 2,382,000 were from other countries, a total only slightly less than the peak world carry-over of 1932. This supply, together with the current crop of 25,462,000 bags in Brazil and 11,500,000 in other countries, gave a total world supply for 1938 estimated at 67,413,000 bags, of which 53,531,000 bags were Brazilian and 13,882,000 the product of other countries. In the last five years world consumption of coffee has averaged about 24,100,000 bags a year.

In August Latin-American coffee-growing countries joined in a conference in Havana, Cuba, seeking ways to regulate production and distribution, but no agreement was reached. In May the Brazilian government's "coffee defence," or "coffee valorization"



COFFEE PICKERS at work

measures provided that 30% of the 1937-38 crop should be bought by the government at 29 cents a bag and destroyed. The government issued 500,000 contos (\$28,632,000) to finance this procedure. It was also decreed that 30% of the crop should be exported and the remaining 40% purchased by the government at \$3.72 a bag and stored to keep it off the immediate market.

In November President Vargas reduced Brazil's export tax on coffee from \$2.58 to 69¢ a bag, and the state of São Paulo reduced its transportation tax on coffee from 42 to 24 cents a bag. These measures were part of a procedure designed to maintain home prices as well as assist in foreign marketing. Since the first governmental activities in "coffee defence" in 1906 Brazil has financed these efforts in different ways, by export taxes, borrowing and issuing currency. These activities through about 30 years constitute the longest period of a government's activities in regulating the marketing of a major agricultural product.

Between 1931 and July 1, 1937, Brazil destroyed 47,961,000 bags of coffee, chiefly the lower grades. Most of this was piled in heaps and burned. Other quantities were dumped in the sea and some effort has been made to convert coffee into fuel for industrial and power plants by mixing it with tar and pressing it into bricks.

For half a century Brazil has produced more than half the world's coffee and since 1900 has averaged about 72%. In four of the last nine years the Brazilian crop has been larger than the entire world's annual consumption of coffee. (See also BRAZIL: History; GUATEMALA.)

(S. O. R.)



DRYING THE COFFEE

## Coffin, Howard Earle

(1873-1937), American industrialist, was born near West Milton, Ohio, Sept. 6, 1873. Early interested in the development of the automobile, he headed the experimental department of the Olds



Motor Works in 1902 and joined in founding the Hudson Motor Car Company in 1909. A champion of standardized production, he was called by President Wilson to head the Committee on Industrial Relations in 1916. Following his appointment to the Aircraft Production Board during the next year, he devoted his time to organizing the aircraft industry. In recent years, he interested himself in developing Southern textile manufacture. His death occurred at Cabin Bluff, Ga., Nov. 21, 1937, as the result of a hunting accident.

**Coke.** The production of coke centres in the more heavily industrialized countries, particularly those with a large pig iron output. World production dropped from 144,500,000 metric tons in 1929 to a low of 79,500,000 tons in 1932, recovering to 116,000,000 tons in 1935, the last year for which complete data are available, and to an estimated 141,000,000 tons in 1936. In 1935 the distribution was: United States 28%; Germany 25%; Soviet Union 14%; United Kingdom 10%; France 6%; Belgium 4%; Netherlands 2%; India, Canada, Czechoslovakia and Poland 6%; leaving 5% for various minor producers. Increases in production in 1937 were heaviest in the United States, Germany, the Soviet Union and the United Kingdom. Although the German pig iron production is less than half that of the United States, its coke output, including that of the Saar, is almost as great; part of this difference is explained by heavy German exports of coke, which amount to about 20% of the output. British exports also take about 20% of the local production.

The United States produced 54,325,000 metric tons in 1929, and 19,766,000 tons in 1932, a drop of 64%, as compared with a drop of only 34% in foreign production; in 1936 production had recovered to 41,980,000 tons, or 75% of the former high, against a recovery to 10% greater than the 1929 high for foreign production. Exports of coke from the United States are small, and outside of shipments of 1-3% of the total to Canada, are negligible in amount; imports average less than 1%. Almost the entire output is made in by-product coking ovens, only  $\frac{3}{4}$ % now being made in beehive ovens, against 11% in 1929, and 40% as late as 1920. Of the 1936 total, 70% was used in iron furnaces, 22% as domestic fuel, 4% in foundries, and 4% in other industrial uses.

(G. A. Ro.)

**Cold, Common.** Kerr selected individuals free from but known to have frequent attacks of the common cold and exposed them to patients in the acute stages. Of a total of nineteen subjects exposed in five groups, not one positive result was obtained. This observation suggests that some colds are not so readily transmitted as is often asserted. Observations by Charlton suggested that people are greatly influenced by climate in their ability to resist infections of the upper respiratory system. Thus persons working in laundries with high temperature and moist heat seem relatively resistant. Furthermore, the individual sufferer from colds between October and April has an altered vasomotor reaction of the upper respiratory mucosa to thermal stimuli applied to the skin. Allergy has been discussed as a causative factor and the virus etiology of some colds has received further study.

The attempted prevention of colds has been concentrated particularly on the alleged effectiveness of vaccines. Rockwell and Van Kirk have continued their studies on the relation of heterophile immunity and the incidence of colds, especially as applied to administration by mouth. The results of administration in this manner have been, they believe, successful in reducing both the incidence and the period of invalidity. Toomey among others, however, has seriously questioned the value of attempted immunization either by this means or by the perhaps more commonly

employed injection method. A five-year study of the value of cod liver oil in reducing industrial absenteeism caused by colds and respiratory diseases concluded that the cod liver oil groups were absent materially less time than the control groups. This view has not, however, been generally accepted.

Rest in bed, according to LeBlanc and Welborn, instituted with relative promptness, seemed to have some effect in reducing the incidence of complications from colds in nurses. There was a difference in favour of this group as compared to another group for whom rest in bed was delayed, in days off duty, days in the hospital and length of illness. Complications were more than five times as frequent in the delayed group as in the other. Inhalations of sulphur dioxide gas were found useful during the early stages of an infection. Deep inhalations however are not necessary and tend to make the patient cough. In a group of patients treated with ephedrine sulphate and amytal orally early in the course of a common cold, improvement was noted in 83% as compared to 26% of the control group receiving capsules of milk sugar. General discussions of the management of the common colds also have been published.

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**Colijn, Hendrick** (1869— ), Dutch statesman, born at Haarlemmer Meer, took up politics as a member of the Anti-Revolutionary (Catholic and Conservative) party in 1909, becoming its leader in 1922. From 1925 to 1926 he was premier, and has held that office continuously since 1933. On Jan. 11, 1937, Dr. Colijn appealed for close co-operation between the democratic States in the interests of world peace and economic stability, suggesting that the Oslo Powers should confer on measures for increasing mutual trade; and such a conference was held at The Hague in March. At the end of February, explaining Holland's defence plans, he stated that she "must be able to defend herself so as to make her worthy of the help of others." In April, he attended the International Sugar Conference in London, returning to Holland to prepare for the general election of May 26, in which, supported by the Liberals against the growing Dutch National Socialist party, he secured a great electoral success, his own party increasing its vote by some 40%. On June 23, he formed his fourth cabinet, from his own party, the Christian Historical party and the Catholics, no Liberals accepting office. After the election he had stated: "Our people have called a halt to Nazism. . . . I am in favour of a strong State authority, but with due respect for the people's freedom."

**College Baseball:** see BASEBALL: *College Baseball*.

**Colleges and Universities:** see UNIVERSITIES AND COLLEGES.

**Colombia**, a republic in northern South America bordering the Pacific and the Caribbean; language, Spanish; capital, Bogotá; president, Alfonso López; area, 440,846 square miles. Population, third largest in South America, 7,851,000 (1928 census); (estimated, 1935) 8,580,000. The leading cities are: Bogotá, 222,467; Barranquilla, 180,000; Medellín, 140,000.

**History.**—Colombia is one of the most rapidly advancing countries of Hispanic America. During 1937 the progressive trend which had marked the administration of President López in previous years was continued, with educational improvement and the furthering of social legislation. Political developments centred largely around a struggle between the left and right wings of the dominant Liberal Party for control of the party organization and through it the nomination of a successor to President López, whose term expires in 1938. The minority Conservative Party



continued its policy of abstention from voting. Despite exaggerated political activity there was no hint of any revolutionary movement or political *coup d'état* which would mar Colombia's proud record of no revolutions in over a quarter century, longer than that of any other Hispanic-American republic.

On Feb. 2, the senate approved 36 articles of amendment to the constitution, and referred them to the house of representatives. Among these were provisions for the creation of a federal district, and others designed to strengthen the powers of congress. The congressional campaign, on whose results control of the Liberal Party hinged, was disorderly. The election itself, on Apr. 6, gave the right-wing liberals, led by Eduardo Santos, a decided majority in the house of representatives. The Conservatives entered no candidates.

In May the congressional session was extended three weeks to allow for deliberation on several administration measures, including obligatory workmen's insurance, Government participation in the banana industry, and peso devaluation. The first was enacted into law, but the last two faced such determined congressional opposition and hostility that President López, on May 25, formally tendered his resignation, and, charging undue political influence of moneyed interests, attacked Santos as a reactionary. Acceptance of the resignation was, however, refused by the senate, and a vote of confidence given the president.

In July the Liberal Party convention, with a majority of its personnel members of congress, met and nominated Santos for the presidency. In accepting, Santos declared for revision of the Colombian concordat with the Holy See and for semi-annual congressional sessions, and against labour unionism. The conservatives put up no official candidate. Late in the year an acrimonious dispute between the church and the Government came to a head, with the archbishop of Bogotá protesting against the scientific teaching fostered by the ministry of education.

Colombia's financial and economic state showed considerable improvement during 1937. As a result efforts were made to arrange resumption of payments on dollar bonds in default since 1930. The condition of the world coffee market at the close of the year, however, left a note of uncertainty, due to the changes in Brazilian coffee policy.

**Trade and Communication.**—Colombia has external communication by sea through Barranquilla and other ports, with a well-developed air transport service. There are 1,400 mi. of railways and some 5,000 of highways, with a program of highway extension under way. In 1936 imports (largely textiles and other manufactured goods) were 120,036,874 pesos from the United States (41%), Germany (22.4%), Great Britain (18.8%); exports were 136,844,451 pesos (not including 20,787,792 pesos of gold), to the United States (54.3%), Germany (16.6%), and Curaçao (11%). Coffee constituted 67.3% of the total exports; petroleum, 10.6%; bananas, 6%.

**Agriculture, Manufactures, Mineral Production.**—In addition to the principal export crops, coffee and bananas, Colombia produces sugar, wheat, rice, cotton, cacao, and tobacco, chiefly for domestic consumption. The pastoral industry annually produces some 3,000,000 pesos value of hides for export. Mineral resources are extensive, Colombia ranking ninth in the world production of petroleum, second in platinum, and first in emeralds. Gold production is heavy. Valuable but undeveloped copper and coal deposits are available. Enormous undeveloped timber resources exist. Manufacturing for domestic consumption has advanced 50 to 80% since the protective tariff was imposed in 1931, with 300,000 skilled and unskilled labourers employed in producing ice, sugar, cement, tobacco, flour, and other commodities.

**Banking and Finance.**—The monetary unit is the peso (value:

56¢ U.S.). In 1936 revenues were 74,186,038.25 pesos, and expenditures 68,337,870.85 pesos. The national budget for 1937 was \$40,758,451.

**Education.**—In 1936 there were 8,459 primary schools (enrolment, 553,706), largely supported by the National Government, and 438 secondary schools (enrolment, 31,122), about 80% privately owned, although aided financially by the Government. The national budget allotted 8.5% to education. The Government policy was for increasingly close Government supervision of all schools and a gradual improvement of educational conditions. In Jan. 1937 a system of seniority and minimum pay for teachers was inaugurated. There were universities at Bogotá and Medellín.

(L. W. BE.)

**Colorado,** a Rocky Mountain State of the United States, popularly known as the "Centennial State," admitted to the Union 1876; area 103,658 sq.mi., one-third occupied by mountains; population (1930) 1,035,791 and estimated, July



TELLER AMMONS, governor of Colorado

1, 1937, at 1,071,000; equally divided between urban and rural; 961,117 whites, 57,676 Mexicans, 11,828 Negroes, 1,395 Indians, other races 3,775; native-born whites 875,711, foreign-born whites 85,406. Capital and largest city, Denver, 287,861.

**History.**—Teller Ammons, Governor; Bryon Rogers, Attorney General; Frank J. Hayes, Lieutenant - Governor; George E. Saunders, Sec-

retary of State; Thomas J. Annear, State Auditor; Homer F. Bedford, State Treasurer.

The year 1937 was marked by three outstanding public enterprises. First, the State made the sum of \$25,000,000 available immediately for highway development. This speeding up on an ambitious program of road building, which has been carried on for years in co-operation with the Federal Government, will serve to bring together communities in the State which are now separated by mountain barriers, and also to accommodate the great number of tourists who flock to Colorado especially in the summer months.

The second enterprise was the most generous provision for impecunious old people which has ever been made in any country. In Nov. 1936, there was incorporated in the State Constitution by popular vote an amendment under which a minimum pension of forty-five dollars a month is made mandatory for each needy citizen who reaches the age of sixty. This provision, which has already plunged the State into a financial crisis, presents some very interesting questions. Will the State be able to afford it? Is the provision not so generous that many will take deliberate measures to qualify as indigents at the age of sixty? And will not Colorado become the happy hunting ground of people from other States? A fifteen year's residence is required, but what are fifteen years if by somehow keeping the wolf from the door for that length of time people can make sure that after sixty there will be no wolf at all?

The last development to be noted is a great engineering enterprise. In the closing days of 1937, President Roosevelt approved an Act of Congress appropriating the sum of \$900,000 for beginning a project which involves the impounding of the more



abundant waters of the Western Slope (the Continental Divide bestrides the State in a north and south direction) in vast reservoirs in the region of Grand Lake, and the bringing of this water through a 13-mile tunnel through the Continental Divide to irrigate some 700,000 ac. of the plains of northern Colorado. Incidentally the enterprise will be a power project also. It is estimated that the cost of the whole project will be in the neighbourhood of \$44,000,000.

**Education.**—State schools are: University of Colorado, State college of agriculture and mechanic arts, State school of mines, State college of education, Western State college, Adams State Normal school, School for the deaf and blind, Fort Lewis school, Industrial school for boys, Industrial school for girls. Private institutions are: University of Denver, Colorado college, Regis college, Colorado Woman's college.

**Charitable and Penal Institutions.**—State hospital for the insane, two homes and training schools for mental defectives, Soldiers and Sailors home, Industrial workshop for the blind, Colorado General hospital, State Psychopathic hospital, State penitentiary, and State reformatory.

**Agriculture, Manufacture and Mining.**—Farm products, \$187,298,846; manufactures, \$135,868,377; tourist business, \$50,000,000; mining (mineral and coal), \$39,496,095; 161 banks with total assets of \$323,252,263. (G. No.)

**Colour Photography:** see PHOTOGRAPHY: *Colour Photography*.

**Colour Printing:** see PRINTING.

**Colours:** see FASHION AND DRESS: *Colours*.

**Columbia, District of:** see WASHINGTON, D.C.

**Columbia University,** in New York city, had in 1937–38 a registration of 32,245 resident students, including 11,809 in the summer session of 1937. The total number of officers of instruction and administration was 3,413. There were 69 university buildings on Morningside Heights. In 1937 the university capital endowment was \$86,688,931 and the total resources were \$154,669,109. The budget appropriation for 1936–37 was \$11,120,344. Tuition fees range from \$390 to \$500. Its main library, containing 1,563,100 volumes, is housed in a new building, the gift of Edward S. Harkness, and known at present as South Hall, opened in 1934. The rare book department and a number of special collections remain in the former library, now known as Low Memorial Library. The department of home study courses and Seth Low junior college in Brooklyn have been discontinued. Teachers college has introduced the school of advanced education leading to the degree of Doctor of Education, and New college, for the training of teachers. A new foreign language centre, the Casa de las Españas, was opened in 1934.

(N. M. B.)

**Columbium.** From little more than a laboratory and museum curiosity, columbium has within five years become a regular commercial product, with an output of some 500–600 tons of concentrates yearly, most of which comes from Nigeria. Occurring chiefly as a discarded impurity in certain tin ores, the tailings piles are now being reworked for their columbium content, which is raised to 45–55% by ore dressing. After importation into the United States, the concentrates are subjected to still further cleaning and purification, and are then treated in an electric furnace for the production of a ferro-alloy containing 50–60% Cb. The original application which led to the commercialization of the metal was its addition to stainless steels for high temperature work, for the prevention of intergranular corrosion. Another important development is a columbium-treated welding

## COLOUR PHOTOGRAPHY—C. I. O.

rod, which makes a weld that does not require heat treatment to develop its maximum strength. (G. A. Ro.)

**Commerce:** see INTERNATIONAL TRADE; SHIPPING, MERCHANT MARINE; TRADE AGREEMENTS.

**Commerce, Department of:** see GOVERNMENT DEPARTMENTS AND BUREAUS.

**Committee for Industrial Organization,** a federation of labour unions in the United States and Canada, is headed by John L. Lewis, president of the United Mine Workers of America.

The C.I.O. was formed on Nov. 9, 1935, by representatives of eight international unions affiliated with the American Federation of Labor to promote the development of industrial unions within the American Federation of Labor. They announced their purpose to encourage and promote organization of workers in the mass-production and unorganized industries of the nation.

The American Federation of Labor was organized in 1881 and developed as a federation of craft unions. Unwilling to yield any of their membership or potential membership to industrial unions, the American Federation of Labor craft union leaders on Sept. 5, 1936, found the unions backing the C.I.O. guilty of "insurrection" and suspended them from the American Federation of Labor. The C.I.O. has developed as an independent labour movement rival since that time. On its second birthday the C.I.O. reported a total membership of approximately 4,000,000 in 32 national and international unions and 600 directly affiliated local unions.

The first objective of the C.I.O. was to organize the employees in the mass-production industries, such as steel, automobiles and rubber, into industrial unions. It took over three weak American Federation of Labor unions in those fields and started an intensive organization campaign in the autumn of 1936. Twelve months later the C.I.O. reported the membership of the Amalgamated Association of Iron, Steel and Tin Workers had grown from approximately 10,000 to more than 500,000; the United Auto-



"THE CLOSED SPACE AT THE CONFERENCE TABLE." Contentious efforts to settle A.F. of L. and C.I.O. differences leave no room for the interests of labour, so Cartoonist Russell represents in the *Los Angeles Times*





HE WHO HOLDS THE AXE saves his own neck. The struggle for power between President William Green of the A.F. of L. and John L. Lewis, head of the C.I.O., as pictured by Elderman in the *Washington Post*

bile Workers from 30,000 to 375,000, and the United Rubber Workers from 25,000 to 75,000. The automobile campaign was attended by several large scale "sit-down" strikes, the first of that type to attract nationwide attention in the United States and Canada. Although the press and public generally condemned these strikes as lawless and a seizure of private property, they won for the automobile workers union the first written labour agreements which two of the largest motor makers in the country ever had granted. In steel, the C.I.O.'s outstanding victory was a written agreement with the United States Steel Corporation, the world's largest steel manufacturer. Along with its economic activity the C.I.O. entered the political field, organizing Labor's Non-Partisan League and the American Labor Party as political adjuncts.

Throughout its earlier development the C.I.O. was financed by contributions from its stronger and wealthier member unions. In the summer of 1937 it levied a per capita tax of five cents a month on each member of its affiliated unions. (See also AMERICAN FEDERATION OF LABOR; CALIFORNIA: *History*; CANADA; CHICAGO; HEPBURN, MITCHELL FREDERICK; LABOUR; LABOUR ARBITRATION: *Intervention*; LABOUR LEGISLATION; LABOUR UNIONS; MICHIGAN: *History*; UNITED STATES: *Labour*.)

(E. F. McG.)

**Commodity Prices:** see PRICES, STATISTICS OF; PURCHASING POWER OF MONEY.

**Commons, Members of:** see PARLIAMENT, HOUSES OF.

**Communism.** Communism is now generally understood to be that form of Marxianism, resting on revolution and the dictatorship of the proletariat, which triumphed in Russia after the Bolshevik revolution in the autumn of 1917, and has since been gradually developed in the course of the last 20 years. In that sense Communism represents revolutionary Socialism, hostile to the slow process of gradual reform and progressive

compromise; and it stands in contrast to the "reformist" Socialism which makes its peace with parliamentary institutions and is willing to proceed by successive stages of change. In another sense, and from another point of view, a distinction has lately been drawn by Stalin and his followers between Communism and Socialism. In this sense, and from this point of view, Communism is not an advanced and revolutionary form of Socialism. It is the ultimate goal, not yet reached in Russia, which can only be attained after a previous and experimental phase of Socialism, which Russia is now supposed to be traversing. On this basis, a Socialist society, such as now exists in Russia, is one in which all are necessarily workers, but each receives a different reward for his work, according to the amount which he has done. A Communist society, which has still to be instituted in the future, will be one in which all work, and each will receive a reward for his work proportionate to his needs. The use of general political terms is often fluctuating; but it seems permissible, in spite of Stalin's recent refinement, to apply the term Communism to the system of society and government which now exists in Russia, and which has recently been clarified and defined in the new Russian constitution adopted in 1936.

We may therefore say that Communism means a system of society and government, achieved by the overthrow of landlordism and capitalism and by the institution of the dictatorship of the proletariat (which primarily consists of the urban artisans), such that the economic basis is a Socialist system of economy and Socialist ownership of the means of production, and such, again, that the political basis is the toilers of towns and villages represented by and acting through their deputies. This, at any rate, is the theory. In practice, the Communist State—similar in this respect to the Fascist—finds its political basis in a single party (a party with nearly three millions of adherents), which manipulates social and political institutions, and which itself is manipulated by its own central bureau and the secretary of that bureau.

On the economic side, as it stands at present, Russia is by no means pledged to an absolute and unqualified system of State-ownership. In effect, its economy is what may be called a mixed economy. That is, a large measure of State-ownership (both of land and of factories); here is a considerable amount of co-operative or collective-ownership (both in respect of agriculture and in respect of industry) by voluntary groups or associations; and alongside this Socialist system of economy, in which the State or the association is the owner, there is also what is called the "small private economy" of individual peasants and craftsmen, based on their own individual stock and labour. Under this mixed economy there is a large and developed system of trade unionism among producers, and another and developed system of co-operative societies among consumers. The State is not all in all: it admits by its side (if under the tutelage of the Communist party, to which it is also subject itself) a trade union and a co-operative movement. Under the same system of a mixed economy there is also, as already said, a considerable divergence of incomes: the workers are largely paid by piece-work rates, and managerial and administrative posts carry higher salaries. The divergence of Russia from so-called capitalistic States may be easily exaggerated. On the other hand, it must be said that in one respect the State goes farther in Russia than in other countries. It furnishes a larger amount of what may be called collective amenities (free education, health-service, holiday facilities, provision for amusement) which are enjoyed equally by all alike. The equality of this enjoyment may be set over against inequality of remuneration.

On the political side Russia seems to have changed greatly (at any rate in form) during recent years. The ultimate power still resides in the Communist party and its bureau. But that is less of the rule of arbitrary discretion (or "revolutionary legality")



and more of an attempt to institute the rule of law. The new constitution of 1936 is an attempt to bring Russia—again it must be said “at any rate in form”—into line with the principles and practice of parliamentary democracy. A directly elected parliament (or “supreme council”), and a removal of disfranchisement, are part of this attempt.

In another respect, too, Russia seems to have changed. Twenty years ago Russian Communism sought to capture the world. It recognized no territorial limits: its theory was one of the subversion of all States and the institution of a single universal workers' republic.

Today Russia is apparently a territorial State, with a national basis. But that is a sense in which, the more it changes, the more Russia remains the same. There is still the old tsarism, if now it is semi-veiled dictatorship; and there are still cleansings and purges and proscriptions.

On Russian Communism the great work is the Webb's book on *Soviet Communism*. The second edition contains, in an appendix to the first volume, a translation of the text of the new Russian constitution. Levin's pamphlet on *The State and Revolution*, published in 1917, contains a statement of the principles and organization of Communism which still deserves to be read.

(E. B.)

## Communist Party.

The world organization of Marxist Socialists operates through branch national parties very loosely affiliated to the Communist International or “Comintern.” In 1936 an “Anti-Communist Pact” was formed by Germany and Japan, and in Nov. 1937 this was joined by Italy.

In 1937, the party in Russia underwent an extensive purge, resulting in the disappearance of such noted figures as Bukharin and Rykov; in March, a reform of the Party constitution and a democratization of its organization, with secret ballot voting on Party questions, was announced.

At its annual conference at Montreuil in January, the membership of the French Communist party was given as over 280,000; M. Thorez, the leader, reaffirmed the party's loyalty to the *Front Populaire*, and general support of the Blum and Chautemps governments continued throughout the year, though the Communists did not enter the Government.

In August 1937 the Communist party in the United States had approximately 50,000 members with 15,000 others enrolled in Young Communist Leagues; and in November 20,000 people packed Madison Square Garden in New York city to see 3,000 more take their pledge. Investigation of expenditures in the 1936 presidential election revealed that the party had spent more than all other minor parties combined (\$270,489 from all party sources) in securing a tally of 80,159 votes. The main developments of the year were the United States Supreme Court reversal of an Oregon decision condemning Dirk de Jonge for organizing an admittedly peaceful Communist meeting, party support of C.I.O. strikes, court confirmation of a decision ruling the party from New York State ballots for failure to poll 50,000 votes in the 1936 gubernatorial election, and initiation of a campaign for support of party newspapers in Chicago and San Francisco.

In Great Britain the only noteworthy electoral success in 1937 was the return in November of the first Communist member to a London Borough Council in the Spitalfields East ward of Stepney. Attempts to form a “United Front” with the Labour Party were pursued, as the result of a resolution of the Party Conference in January; and at elections the party generally continued to support official Labour candidates, frequently causing embarrassment to the latter thereby; but the Labour party in conference in May

renewed their decision not to permit Communist affiliation, and the disbandment in June of Sir Stafford Cripps's Socialist League marked the effective end of the United Front. The Party membership, though some increase took place, did not exceed 10,000.

## Community Chests.

The method of raising funds for the support of charitable and philanthropic agencies through one annual appeal on a community-wide basis is usually referred to as the community chest. Closely allied with it is the central planning group generally known as the council of social agencies. In 1938 the 25th anniversary of the modern community chest movement will be observed. It was in 1913 that Cleveland, Ohio, formed a Federation for Charity and Philanthropy, which raised money for its constituent organizations, and inaugurated the system, now considered essential to a chest, of budgeting to determine their actual needs and resources.

There are 465 communities which finance private social services through contributions to community chests or community funds. Of these, 453 are in the United States, including two in Hawaii, nine in Canada, two in South Africa, and one in Cuba. The areas covered by these chests include a total population of 49,881,361. About 9,000,000 persons make their annual contribution to community service through this medium.

Chests in 1936, for use in 1937, show a total of \$81,611,695. Results from 311 campaigns in the fall of 1937 showed a total of \$61,000,000, with a 3% rate of increase which was expected to bring the year's total of contributions for 1938, including the additional 155 chests making later reports, to fully \$83,000,000.

Affected less by the depression than were other types of contributions, chest resources at their lowest in 1935 had dropped to 84% of their pre-depression level. Since then they have steadily increased, as shown by a study of comparable chests, until the level of giving for 1938 was 93% of that for 1929.

To give backing to local campaigns and to stimulate greater participation by citizens, the Community Mobilization for Human Needs was first organized in 1932. Thirty-six national social agencies co-operate with it, and Community Chests & Councils, Inc., is its administrative agency. For 1937-38 Charles P. Taft, of Cincinnati, was chairman, and the National Citizens' Committee comprised a representative group of 150 men and women.

A swing in emphasis from efficient money-raising to efficient money-spending has accompanied the growing stability of financial campaigns. The quality of the social services financed by the chest has appeared more and more a necessary concern of the chest and the council of social agencies. Surveys and studies, several under the direction of the national office of Community Chests & Councils, have been carried on in numerous cities to determine the best possible use of funds to meet changing community needs.

The recent enlargement of governmental responsibility and resources in social welfare has led to increased interplay between official and voluntary social agencies.

Officers of Community Chests and Councils, Inc., for 1937-38: Honorary president, Newton D. Baker (died Dec. 25, 1937); president, Stillman F. Westbrook; vice-presidents, John Stewart Bryan, Geoffrey S. Smith, Dr. George E. Vincent; executive vice-president, Allen T. Burns; treasurer, Hendon Chubb; secretary, Percival Dodge. Address: 155 East 44th Street, New York.

(A. T. B.)

**Community Trusts.** Charitable trust funds approximating \$46,500,000 (£9,300,000) have been accumulated in 78 community trusts, founded since 1914, chiefly in the United States. These trusts or foundations are, ordinarily,



composite charitable administrative agencies comprised of numerous funds from diverse sources and for varied purposes, with several fiduciary institutions supplying fiscal management to the funds in their custody and with a central distributing committee supervising appropriations. Usually a portion, and frequently a majority, of the distributing committee is appointed by the incumbents of positions of public trust, such as the head of the Association of the Bar, the Academy of Medicine, or federal judicial officials.

Each community foundation is a framework within which numerous charitable funds may be administered. Its principal distinguishing characteristic—subject to local variations—lies in the circumstance that, though the distributing committee will undertake to give expression to the desires of a founder concerning the specific application of a fund established by him, discretionary power is vested in the committee to amend and adapt such originally expressed desire if unforeseen changes in conditions make its literal execution impossible or impracticable. By this device the rigidity of permanent charitable funds is avoided and the curative powers of the courts over obsolete trusts is amplified.

The resources of these trusts have trebled during the past ten years. The New York Community Trust, with resources of \$8,764,712 (£1,752,942) is the largest, followed by those in Chicago, Cleveland, Boston, and Winnipeg. Of the 78 existing trusts, 59 are now in possession of principal funds and 41 are making periodical distributions currently aggregating \$1,100,000 (£220,000) annually. While their rate of growth has been affected by the economic depression following 1929 and by the increased financing of relief in the U.S. Government, it is nevertheless probable that the provisions of numerous wills, executed but not yet effective, will continue to expand the resources of these newly developed media of philanthropic administration. (R. Hs.)

**Concrete:** see ARCHITECTURE: *Materials*.

**Confectionery.** Flippantly described only a few decades ago as the "lollipop" trade, the chocolate and confectionery industry has reached considerable proportions, not only in Great Britain and the United States of America, but also in many of the British Dominions. The industry covers chocolate and a wide variety of cocoa preparations, whilst sugar confectionery (candy) covers a wide range of goods, from hard lozenges to toffee and chewing gum. Sugar confectionery is quite separate from flour confectionery, which is the product of the baker.

The most striking development recently has been in the direction of the improved packing of the goods, most of the sweets now being wrapped individually and presented in boxes, bottles, or other packs. On the mechanical side great progress has been made during the last year or two in wrapping machinery, particularly in the direction of greater outputs per machine and per person employed.

The principal countries of manufacture are the United States, Great Britain, Switzerland, France, Germany, and the larger British Dominions. The consumption per head is greatest in Great Britain, where the output on a retail basis is valued at over \$250,000,000 per annum. The fifth census of production (1935) showed a value of the output of the factories as \$181,610,000. In the United States the output in 1936 for 146 manufacturers (according to the foodstuffs division of the Department of Commerce) was \$125,881,230.

Over one million people are employed in the manufacture and distribution of chocolate and confectionery, the ingredients of which come from every quarter of the world. Numerous other industries, such as machinery manufacturers, producers of essences and essential oils, glucose (maize syrup), and box manu-

facturers find in the chocolate and confectionery industry a wide outlet for their goods. (A. E. Wt.)

**Confucianism,** the term applied to the ethical teachings and rites associated with the name of the famous Chinese sage Confucius (traditional dates, 551–479 B.C.). Confucianism is a system of morality rather than a religion, in the ordinary sense of the term. It emphasizes five "cardinal relationships," between ruler and subject, between father and son, between husband and wife, between brothers and between friends. Confucius, like other philosophers of the Chou Period to which he belongs, is primarily concerned with the salvation of society through the development of ideal human relations. The general tenor of his teaching is conservative and he enjoins the duties of obedience owed by subjects to rulers, by children to parents, by wives to husbands. At the same time he emphasizes the obligations of the ruler and of the governing classes generally and points out that society is best kept at peace not by force, but by the influence of high character on the part of the emperor and his subordinates. His fundamental rule of morality was: "What you do not wish done to yourself, do not do to another." The five major Confucian virtues are filial piety, love, wisdom, reverence, and sincerity. Although Confucianism underwent some vicissitudes of court favour and was modified by the impact of Buddhism, it acquired the status of a Chinese State religion and has exercised a profound influence on Chinese national thought and social development.

Of the estimated 350,600,000 Confucianists, 350,000,000 are residents of Asia (almost all of China), the remainder of North America. (W. H. Ch.)

**Congo, Belgian:** see BELGIAN CONGO.

**Congregational Church.** During the past year, this denomination's numerical strength in the United States was increased to a total of 1,030,029. Additions to its membership for the year 1936 were 55,659, registering a net gain of 1,991. The number of churches throughout the United States numbered 6,153 on Jan. 1, 1937. During the year 1937, the denomination proceeded further in the unifying of its organized boards, bringing together in one Board of Home Missions all of the societies dealing with home missions, education, ministerial relief, Negro education and publishing. The American Board of Commissioners for Foreign Missions, the foreign board of the denomination, continues as a separate unit. These boards received during the year 1936 a total of \$2,114,954, of which more than three-fourths was from living givers, the balance being derived from endowments and legacies. The American board, operating under other flags, has had its special problems in the Far East. Its missionaries in China have continued their work with slight interruption, only one school having been closed as a result of the war with Japan. Its missionaries in Japan also have continued to work, although faced with the growing nationalism of Japan which threatens an end to all foreign influences. The biennial General Council of the denomination will be held at Beloit, Wisconsin in June 1938. The denominational headquarters are at 287 Fourth avenue, New York. Dr. Charles E. Burton is the general secretary. (H. C. He.)

**Great Britain.**—In the year 1937 the Congregational Union of England and Wales possessed a membership of 424,774, showing a decrease of 7,589 on the total for 1936. There are 4,465 places of worship (including 1,017 in the Union of Welsh Independents); Sunday school pupils total 395,060, being 23,996 fewer than in the previous year.

The Congregational Union of Scotland has 175 places of worship



and a membership of 40,546; the Congregational Union of Ireland 78 and 2,170 respectively. International Congregationalism has 69,066 members in Africa; 21,611 in Australia and New Zealand; 30,580 in China and 48,582 in India and Ceylon.

During 1937, in England and Wales, six new churches have been opened and 11 new churches are in course of building or contemplated.

The 105th Assembly of the Union was held in London in May when the Rev. E. J. Price, principal of the Yorkshire United Independent college, Bradford, occupied the chair. As chairman of the Union of England and Wales Mr. Price was present at the coronation ceremony in Westminster Abbey.

The chairman's address dealt with the subject "The Churches, the Ministry and the Colleges." Special tribute was paid to Dr. J. D. Jones, who was then about to retire from the ministry of Richmond Hill church, Bournemouth, after a pastorate of nearly 40 years. Dr. Jones had been twice elected chairman of the Congregational Union of England and Wales and has been since 1930 moderator of the International Congregational Council.

The 97th Autumn Assembly was held at Bristol in October, when a resolution was passed that: "This Assembly views with alarm the rapid spread of clubs which are free from the licensing restrictions of the public house and lack proper supervision."

All churches in the union have been asked specially to observe Sunday, June 19, 1938, as the fourth centenary of the Reformation and of the royal command that a copy of the English Bible should be placed in every English church. Further conversations were held during the year between representative Presbyterians and Congregationalists with a view to closer co-operation.

The Rev. R. W. Thompson, Bristol, was elected chairman of the Union of England and Wales, 1938-39.

**Congress, United States.** First of United States Congresses to meet on Jan. 3 instead of on March 4, the Seventy-Fifth Congress met for its second session on Jan. 3, 1938, with the following list of members:

#### United States Senate (\*re-elected)

Presiding Officer: John N. Garner, Vice-President  
Majority Leader: Alben W. Barkley, of Kentucky  
Minority Leader: Charles L. McNary, of Oregon

State	Name	Party	Term Expires	Residence
Ala.	*Bankhead, John H.	Dem.	1943	Jasper
	Graves, Mrs. Dixie Bibb	Dem.	1939	Montgomery
Ariz.	*Ashurst, Henry F.	Dem.	1941	Prescott
	*Hayden, Carl	Dem.	1939	Phoenix
Ark.	*Caraway, Mrs. Hattie W.	Dem.	1939	Jonesboro
	Miller, John E.	Dem.	1943	Searcy
Calif.	*Johnson, Hiram W.	Rep.	1941	San Francisco
	McAdoo, William G.	Dem.	1939	Los Angeles
Colo.	Adams, Alva B.	Dem.	1939	Pueblo
	Johnson, Edwin C.	Dem.	1943	Craig
Conn.	Loungan, Augustine	Dem.	1939	Hartford
	Maloney, Francis T.	Dem.	1941	Meriden
Del.	*Townsend, John G., Jr.	Rep.	1941	Selbyville
	Hughes, James H.	Dem.	1943	Dover
Fla.	Pepper, Claude	Dem.	1939	Tallahassee
	Andrews, Charles O.	Dem.	1941	Orlando
Ga.	*George, Walter F.	Dem.	1939	Vienna
	*Russell, Richard B., Jr.	Dem.	1943	Winder
Ida.	*Borah, William E.	Rep.	1943	Boise
	Pope, James P.	Dem.	1939	Boise
Ill.	*Lewis, James H.	Dem.	1943	Chicago
	Dieterich, William H.	Dem.	1939	Beardstown
Ind.	Van Nuys, Frederick	Dem.	1939	Indianapolis
	Minton, Sherman	Dem.	1941	New Albany
Iowa	Gillette, Guy M.	Dem.	1939	Cherokee
	Herring, Clyde La V.	Dem.	1943	Des Moines
Kan.	*Capper, Arthur	Rep.	1943	Topeka
	*McGill, George	Dem.	1939	Wichita
Ky.	*Barkley, Alben W.	Dem.	1939	Paducah
	*Logan, Marvel M.	Dem.	1943	Bowling Green
La.	Overton, John H.	Dem.	1939	Alexandria
	Ellender, Allen J.	Dem.	1943	Houma
Me.	*Hale, Frederick	Rep.	1941	Portland
	*White, Wallace H., Jr.	Rep.	1943	Auburn
Md.	*Tydings, Millard E.	Dem.	1939	Havre de Grace
	Radcliffe, George L.	Dem.	1941	Baltimore

State	Name	Party	Term Expires	Residence
Mass.	*Walsh, David I.	Dem.	1941	Fitchburg
	Lodge, Henry C., Jr.	Rep.	1943	Beverly
Mich.	*Vandenberg, Arthur H.	Rep.	1941	Grand Rapids
	Brown, Prentiss M.	Dem.	1943	St. Ignace
Minn.	*Shipstead, Henrik	F.L.	1941	Miltna
	Lundeen, Ernest	F.L.	1943	Edina Village
Miss.	*Harrison, Pat	Dem.	1943	Gulport
	Bilbo, Theodore G.	Dem.	1941	Poplarville
Mo.	Clark, Bennett C.	Dem.	1939	Ladue Village
	Truman, Harry S.	Dem.	1941	Independence
Mont.	*Wheeler, Burton K.	Dem.	1941	Butte
	*Murray, James E.	Dem.	1943	Butte
Neb.	*Norris, George W.	Ind.	1943	McCook
	Burke, Edward R.	Dem.	1941	Omaha
Nev.	*Pittman, Key	Dem.	1941	Tonopah
	McCarran, Patrick A.	Dem.	1939	Reno
N.H.	Brown, Fred H.	Dem.	1939	Somersworth
	Bridges, Henry S.	Rep.	1943	East Concord
N.J.	Smathers, William H.	Dem.	1943	Margate
	Moore, Arthur H.	Dem.	1941	Jersey City
N.M.	*Hatch, Carl A.	Dem.	1943	Clovis
	Chavez, Dennis	Dem.	1941	Albuquerque
N.Y.	*Copeland, Royal S.	Dem.	1941	New York City
	*Wagner, Robert F.	Dem.	1939	New York City
N.C.	*Bailey, Josiah W.	Dem.	1943	Raleigh
	*Reynolds, Robert R.	Dem.	1939	Asheville
N.D.	*Frazier, Lynn J.	Rep.	1941	Hoople
	*Nye, Gerald P.	Rep.	1939	Cooperstown
Ohio	*Bulkeley, Robert J.	Dem.	1939	Cleveland
	Donahy, Vic	Dem.	1941	Columbus
Okla.	*Thomas, Elmer	Dem.	1939	Medicine Park
	Lee, Josh	Dem.	1943	Norman
Ore.	*McNary, Charles L.	Rep.	1943	Salem
	*Steiner, Frederick	Rep.	1939	Portland
Pa.	*Davis, James J.	Rep.	1939	Pittsburgh
	Guffey, Joseph F.	Dem.	1941	Pittsburgh
R.I.	Gerry, Peter G.	Dem.	1941	Warwick
	Green, Theodore F.	Dem.	1943	Providence
S.C.	*Smith, Ellison DuB.	Dem.	1939	Lynchburg
	*Byrnes, James F.	Dem.	1943	Spartanburg
S.D.	*Bulow, William J.	Dem.	1943	Beresford
	Hitchcock, Herbert E.	Dem.	1939	Mitchell
Tenn.	*McKellar, Kenneth	Dem.	1941	Memphis
	Berry, George L.	Dem.	1943	Rogersville
Tex.	*Sheppard, Morris	Dem.	1943	Texarkana
	*Connally, Tom	Dem.	1941	Marlin
Utah	*King, William H.	Dem.	1941	Salt Lake City
	Thomas, Elbert D.	Dem.	1939	Salt Lake City
Vt.	*Austin, Warren R.	Rep.	1941	Burlington
	Gibson, Ernest W.	Rep.	1939	Brattleboro
Va.	*Glass, Carter	Dem.	1943	Lynchburg
	*Byrd, Harry F.	Dem.	1941	Berryville
Wash.	Bone, Homer T.	Dem.	1939	Tacoma
	Schwellenbach, Lewis B.	Dem.	1941	Seattle
W.Va.	*Neely, Matthew M.	Dem.	1943	Fairmont
	Holt, Rush D.	Dem.	1941	Weston
Wis.	*LaFollette, Robert M., Jr.	Pro.	1941	Madison
	Duffy, F. Ryan	Dem.	1939	Fond du Lac
Wyo.	*O'Mahoney, Joseph C.	Dem.	1941	Cheyenne
	Schwartz, Harry H.	Dem.	1943	Casper

#### United States House of Representatives (\*served in 74th Congress)

Speaker: William B. Bankhead, of Alabama

Majority Leader: Sam Rayburn, of Texas

Minority Leader: Bertrand H. Snell, of New York

State	Dist.	Name	Party	Residence
Ala.	1	*Boykin, Frank W.	Dem.	Mobile
	2	Hill, Lister	Dem.	Montgomery
	3	*Steagall, Henry B.	Dem.	Ozark
	4	*Hobbs, Sam	Dem.	Selma
	5	*Starnes, Joe	Dem.	Guntersville
	6	Jarman, Pete	Dem.	Livingston
	7	*Bankhead, William B.	Dem.	Jasper
	8	Sparkman, John J.	Dem.	Huntsville
	9	Patrick, Luther	Dem.	Birmingham
Ariz.		Murdock, John R.	Dem.	Tempe
Ark.	1	*Driver, William J.	Dem.	Osceola
	2	Vacant		
	3	*Fuller, Claude A.	Dem.	Eureka Springs
	4	*Cravens, Ben	Dem.	Fort Smith
	5	*Terry, David D.	Dem.	Little Rock
	6	*McClellan, John L.	Dem.	Malvern
	7	Kitchens, Wade H.	Dem.	Magnolia
Calif.	1	*Lea, Clarence F.	Dem.	Santa Rosa
	2	*Englebright, Harry L.	Rep.	Nevada City
	3	*Buck, Frank H.	Dem.	Vacaville
	4	Havener, Frank R.	Pro.	San Francisco
	5	*Welch, Richard J.	Rep.	San Francisco
	6	*Carter, Albert E.	Rep.	Oakland
	7	*Tolan, John H.	Dem.	Oakland
	8	*McGrath, John J.	Dem.	San Mateo
	9	*Gearhart, Bertrand W.	Rep.	Fresno



State	Dist.	Name	Party	Residence	State	Dist.	Name	Party	Residence
Calif.	10	Elliott, Albert J.	Dem.	Tulare	Ky.	6	*Chapman, Virgil	Dem.	Paris
	11	*McGroarty, John S.	Dem.	Tujunga		7	*May, Andrew J.	Dem.	Prestonsburg
	12	Voorhis, Jerry	Dem.	San Dimas		8	Vinson, Fred M.	Dem.	Ashland
	13	*Kramer, Charles	Dem.	Los Angeles		9	*Robison, John M.	Rep.	Barbourville
	14	*Ford, Thomas F.	Dem.	Los Angeles	La.	1	*Fernandez, Joachim O.	Dem.	New Orleans
	15	*Costello, John M.	Dem.	Hollywood		2	*Maloney, Paul H.	Dem.	New Orleans
	16	*Dockweiler, John F.	Dem.	Los Angeles		3	Mouton, Robert L.	Dem.	Lafayette
	17	*Colden, Charles J.	Dem.	San Pedro		4	Brooks, Overton	Dem.	Shreveport
	18	*Scott, Byron N.	Dem.	Long Beach		5	Mills, Newt V.	Dem.	Mer Rouge
	19	Sheppard, Harry R.	Dem.	Yucaipa		6	Griffith, John K.	Dem.	Slidell
Colo.	20	Izac, Edouard V. M.	Dem.	San Diego		7	*DeRouen, René L.	Dem.	Ville Platte
	1	*Lewis, Lawrence	Dem.	Denver		8	Allen, A. Leonard	Dem.	Winnfield
	2	*Cummings, Fred	Dem.	Fort Collins	Me.	1	Oliver, James C.	Rep.	South Portland
	3	*Martin, John A.	Dem.	Pueblo		2	Smith, Clyde H.	Rep.	Skowhegan
	4	*Taylor, Edward T.	Dem.	Glenwood Springs		3	*Brewster, Ralph O.	Rep.	Dexter
Conn.		*Citron, William M.	Dem.	Middletown	Md.	1	*Goldsborough, T. Alan	Dem.	Denton
	1	*Kopplemann, Herman P.	Dem.	Hartford		2	*Cole, William P., Jr.	Dem.	Towson
	2	Fitzgerald, William J.	Dem.	Norwich		3	*Palmisano, Vincent L.	Dem.	Baltimore
	3	*Shanley, James A.	Dem.	New Haven		4	*Kennedy, Ambrose J.	Dem.	Baltimore
	4	Phillips, Alfred N., Jr.	Dem.	Stamford		5	*Gambrell, Stephen W.	Dem.	Laurel
	5	*Smith, J. Joseph	Dem.	Waterbury		6	*Lewis, David J.	Dem.	Cumberland
Del.		Allen, William F.	Dem.	Seaford	Mass.	1	*Treadway, Allen T.	Rep.	Stockbridge
Fla.	1	*Peterson, J. Hardin	Dem.	Lakeland		2	Clason, Charles R.	Rep.	Springfield
	2	*Green, Robert A.	Dem.	Starke		3	*Casey, Joseph E.	Dem.	Clinton
	3	*Caldwell, Millard F.	Dem.	Milton		4	*Holmes, Pehr G.	Rep.	Worcester
	4	*Wilcox, J. Mark	Dem.	West Palm Beach		5	*Rogers, Mrs. Edith N.	Rep.	Lowell
	5	Hendricks, Joe	Dem.	De Land		6	Bates, George J.	Rep.	Salem
Ga.	1	*Peterson, Hugh	Dem.	Ailey		7	Connery, Lawrence J.	Dem.	Lynn
	2	*Cox, Edward E.	Dem.	Camilla		8	*Healey, Arthur D.	Dem.	Somerville
	3	Pace, Stephen	Dem.	Americus		9	Luce, Robert	Rep.	Waltham
	4	*Owen, Emmett M.	Dem.	Griffin		10	*Tinkham, George H.	Rep.	Boston
	5	*Ramspeck, Robert	Dem.	Decatur		11	Flaherty, Thomas F.	Dem.	Boston
	6	*Vinson, Carl	Dem.	Milledgeville		12	*McCormack, John W.	Dem.	Boston
	7	*Tarver, Malcolm C.	Dem.	Dalton		13	*Wigglesworth, Richard B.	Rep.	Milton
	8	*Deen, Braswell D.	Dem.	Alma		14	*Martin, Joseph W., Jr.	Rep.	North Attleboro
	9	*Whelchel, B. Frank	Dem.	Gainesville		15	*Gifford, Charles L.	Rep.	Barnstable
	10	*Brown, Paul	Dem.	Elberton	Mich.	1	*Sadowski, George G.	Dem.	Detroit
Ida.	1	*White, Compton I.	Dem.	Clarksfork		2	*Michener, Earl C.	Rep.	Adrian
	2	*Clark, D. Worth	Dem.	Pocatello		3	Shafer, Paul W.	Rep.	Battle Creek
Ill.		Champion, Edwin Van M.	Dem.	Peoria		4	*Hoffman, Clare E.	Rep.	Allegan
		Long, Lewis M.	Dem.	Sandwich		5	*Mapes, Carl E.	Rep.	Grand Rapids
	1	*Mitchell, Arthur W.	Dem.	Chicago		6	Transue, Andrew J.	Dem.	Flint
	2	*McKeough, Raymond S.	Dem.	Chicago		7	*Wolcott, Jesse P.	Rep.	Port Huron
	3	*Kelly, Edward A.	Dem.	Chicago		8	*Crawford, Fred L.	Rep.	Saginaw
	4	*Beam, Harry P.	Dem.	Chicago		9	*Engel, Albert J.	Rep.	Lake City
	5	*Sabath, Adolph J.	Dem.	Chicago		10	*Woodruff, Roy O.	Rep.	Bay City
	6	*O'Brien, Thomas J.	Dem.	Chicago		11	Luecke, John	Dem.	Escanaba
	7	*Schuetz, Leonard W.	Dem.	Chicago		12	*Hook, Frank E.	Dem.	Ironwood
	8	*Kocalkowski, Leo	Dem.	Chicago		13	O'Brien, George D.	Dem.	Detroit
	9	*McAndrews, James	Dem.	Chicago		14	*Rabaut, Louis C.	Dem.	Detroit
	10	*Church, Ralph E.	Rep.	Evanston		15	*Dingell, John D.	Dem.	Detroit
	11	*Reed, Chauncey W.	Rep.	West Chicago		16	*Lesinski, John	Dem.	Dearborn
	12	Mason, Noah M.	Rep.	Oglesby		17	*Dondero, George A.	Rep.	Royal Oak
	13	*Allen, Leo E.	Rep.	Galena	Minn.	1	*Andresen, August H.	Rep.	Red Wing
	14	*Thompson, Chester	Dem.	Rock Island		2	*Ryan, Elmer J.	Dem.	South St. Paul
	15	Boyer, Lewis L.	Dem.	Quincy		3	Teigan, Henry G.	F.L.	Minneapolis
	16	*Dirksen, Everett McK.	Rep.	Pekin		4	*Maas, Melvin J.	Rep.	St. Paul
	17	*Arends, Leslie C.	Rep.	Melvin		5	Johnson, Dewey W.	F.L.	Minneapolis
	18	*Meeks, James A.	Dem.	Danville		6	*Knutson, Harold	Rep.	St. Cloud
	19	Rigney, Hugh M.	Dem.	Arthur		7	*Kvale, Paul J.	F.L.	Benson
	20	*Lucas, Scott W.	Dem.	Havana		8	Bernard, John T.	F.L.	Eveleth
	21	Fries, Frank W.	Dem.	Carlville		9	*Buckler, Richard T.	F.L.	Crookston
	22	*Schaefer, Edwin M.	Dem.	Belleville	Miss.	1	*Rankin, John E.	Dem.	Tupelo
	23	Arnold, Laurence F.	Dem.	Newton		2	*Doxey, Wall	Dem.	Holly Springs
	24	*Parsons, Claude V.	Dem.	Golconda		3	*Whittington, William M.	Dem.	Greenwood
	25	*Keller, Kent E.	Dem.	Ava		4	*Ford, Aaron L.	Dem.	Ackerman
Ind.	1	*Schulte, William T.	Dem.	Hammond		5	Collins, Ross A.	Dem.	Meridian
	2	*Halleck, Charles A.	Rep.	Rensselaer		6	*Colmer, William M.	Dem.	Pascagoula
	3	*Pettengill, Samuel B.	Dem.	South Bend		7	*McGehee, Dan R.	Dem.	Meadville
	4	*Farley, James I.	Dem.	Auburn	Mo.	1	*Romjue, Milton A.	Dem.	Macon
	5	*Griswold, Glenn	Dem.	Peru		2	*Nelson, William L.	Dem.	Columbia
	6	*Jenckes, Mrs. Virginia E.	Dem.	Terre Haute		3	*Duncan, Richard M.	Dem.	St. Joseph
	7	*Greenwood, Arthur H.	Dem.	Washington		4	*Bell, C. Jasper	Dem.	Kansas City
	8	*Boehne, John W., Jr.	Dem.	Evansville		5	*Shannon, Joseph B.	Dem.	Kansas City
	9	*Crowe, Eugene B.	Dem.	Bedford		6	*Wood, Reuben T.	Dem.	Springfield
	10	*Gray, Finly H.	Dem.	Connersville		7	*Short, Dewey	Rep.	Galena
	11	*Larrabee, William H.	Dem.	New Palestine		8	*Williams, Clyde	Dem.	Hillsboro
	12	*Ludlow, Louis	Dem.	Indianapolis		9	*Cannon, Clarence	Dem.	Elsberry
Iowa	1	*Eicher, Edward C.	Dem.	Washington		10	*Zimmerman, Orville	Dem.	Kennett
	2	Jacobsen, William S.	Dem.	Clinton		11	*Hennings, Thomas C., Jr.	Dem.	St. Louis
	3	*Gwynne, John W.	Rep.	Waterloo		12	*Anderson, C. Arthur	Dem.	Lemay
	4	*Biermann, Fred	Dem.	Decorah		13	*Cochran, John J.	Dem.	St. Louis
	5	*Thurston, Lloyd	Rep.	Osceola	Mont.	1	O'Connell, Jerry J.	Dem.	Butte
	6	Dowell, Cassius C.	Rep.	Des Moines		2	O'Connor, James F.	Dem.	Livingston
	7	*Wearin, Otha D.	Dem.	Hastings	Neb.	1	*Luckey, Henry C.	Dem.	Lincoln
	8	*Gilchrist, Fred C.	Rep.	Laurens		2	*McLaughlin, Charles F.	Dem.	Omaha
	9	Harrington, Vincent F.	Dem.	Sioux City		3	*Stefan, Karl	Rep.	Norfolk
Kan.	1	*Lambertson, William P.	Rep.	Fairview		4	*Binderup, Charles G.	Dem.	Minden
	2	*Guyer, Ulysses S.	Rep.	Kansas City		5	*Coffee, Harry B.	Dem.	Chadron
	3	*Patterson, Edward W.	Dem.	Pittsburg	Nev.		*Scrugham, James G.	Dem.	Reno
	4	Rees, Edward H.	Rep.	Emporia	N.H.	1	Jenks, Arthur B.	Rep.	Manchester
	5	*Houston, John M.	Dem.	Newton		2	*Tobey, Charles W.	Rep.	Temple
	6	*Carlson, Frank	Rep.	Concordia	N.J.	1	*Wolverton, Charles A.	Rep.	Merchantville
	7	*Hope, Clifford R.	Rep.	Garden City		2	Wene, Elmer H.	Dem.	Vineland
Ky.	1	Gregory, Noble J.	Dem.	Mayfield		3	*Sutphin, William H.	Dem.	Matawan
	2	Vincent, Beverly M.	Dem.	Brownville		4	*Powers, D. Lane	Rep.	Trenton
	3	*O'Neal, Emmet	Dem.	Louisville		5	*Eaton, Charles A.	Rep.	North Plainfield
	4	*Creal, Edward W.	Dem.	Hodgenville		6	*McLean, Donald H.	Rep.	Elizabeth
	5	*Spence, Brent	Dem.	Fort Thomas		7	*Thomas, J. Parnell	Rep.	Allendale



State	Dist.	Name	Party	Residence	State	Dist.	Name	Party	Residence
N.J.	8	*Seger, George N.	Rep.	Passaic	Ore.	1	*Mott, James W.	Rep.	Salem
	9	*Kenney, Edward A.	Dem.	Cliffside Park		2	*Pierce, Walter M.	Dem.	La Grande
	10	*Hartley, Fred A., Jr.	Rep.	Kearny	Pa.	3	Honeyman, Mrs. Nan W.	Dem.	Portland
	11	O'Neill, Edward L.	Dem.	Newark		1	Sacks, Leon	Dem.	Philadelphia
	12	Towey, Frank W., Jr.	Dem.	Caldwell		2	McGranery, James P.	Dem.	Philadelphia
	13	*Norton, Mrs. Mary T.	Dem.	Jersey City		3	Bradley, Michael J.	Dem.	Philadelphia
	14	Hart, Edward J.	Dem.	Jersey City		4	*Daly, J. Burwood	Dem.	Philadelphia
N.M.		*Dempsey, John J.	Dem.	Santa Fe		5	*Dorsey, Frank J. G.	Dem.	Philadelphia
		*Merritt, Matthew J.	Dem.	Flushing		6	*Stack, Michael J.	Dem.	Philadelphia
		*O'Day, Mrs. Caroline	Dem.	Rye		7	Drew, Ira W.	Dem.	Philadelphia
	1	*Bacon, Robert L.	Rep.	Old Westbury		8	*Wolfenden, James	Rep.	Upper Darby
	2	*Barry, William B.	Dem.	Hollis		9	*Frey, Oliver W.	Dem.	Allentown
	3	*Pfeifer, Joseph L.	Dem.	Brooklyn		10	*Kinzer, J. Roland	Rep.	Lancaster
	4	*Cullen, Thomas H.	Dem.	Brooklyn		11	*Boland, Patrick J.	Dem.	Scranton
	5	*Evans, Marcellus H.	Dem.	Brooklyn		12	Flannery, J. Harold	Dem.	Pittston
	6	*Somers, Andrew L.	Dem.	Brooklyn		13	*Gildea, James H.	Dem.	Coaldale
	7	*Delaney, John J.	Dem.	Brooklyn		14	Moser, Guy L.	Dem.	Douglasville
	8	O'Toole, Donald L.	Dem.	Brooklyn		15	Rutherford, Albert G.	Rep.	Honesdale
	9	Keogh, Eugene J.	Dem.	Brooklyn		16	*Rich, Robert F.	Rep.	Woodrich
	10	*Celler, Emanuel	Dem.	Brooklyn		17	*Ditter, J. William	Rep.	Ambler
N.Y.		*O'Leary, James A.	Dem.	W. New Brighton		18	Simpson, Richard M.	Rep.	Huntingdon
	11	*Dickstein, Samuel	Dem.	New York City	R.I.	19	Swope, Guy J.	Dem.	Harrisburg
	12	*Sullivan, Christopher D.	Dem.	New York City		20	Jarrett, Benjamin	Rep.	Farrell
	13	*Sirovich, William I.	Dem.	New York City		21	*Walter, Francis E.	Dem.	Easton
	14	*Boylan, John J.	Dem.	New York City		22	*Haines, Harry L.	Dem.	Red Lion
	15	*O'Connor, John	Dem.	New York City		23	*Gingery, Don	Dem.	Clearfield
	16	*Barton, Bruce	Rep.	New York City		24	*Snyder, J. Buell	Dem.	Perryopolis
	17	*Kennedy, Martin J.	Dem.	New York City		25	*Faddis, Charles I.	Dem.	Waynesburg
	18	*Bloom, Sol	Dem.	New York City		26	*Eckert, Charles R.	Dem.	Beaver
	19	Lanzetta, James J.	Dem.	New York City		27	*Gray, Joseph	Dem.	Spangler
	20	*Gavagan, Joseph A.	Dem.	New York City		28	Allen, Robert G.	Dem.	Greensburg
	21	*Curley, Edward W.	Dem.	Bronx		29	*Crosby, Charles N.	Dem.	Meadville
	22	*Buckley, Charles A.	Dem.	Bronx		30	DeMuth, Peter J.	Dem.	Pittsburgh
	23	*Fitzpatrick, James M.	Dem.	Bronx		31	*Quinn, James L.	Dem.	Braddock
	24	Gamble, Ralph A.	Rep.	Larchmont		32	Eberharter, Herman P.	Dem.	Pittsburgh
N.C.	25	*Fish, Hamilton	Rep.	Garrison		33	*Ellenbogen, Henry	Dem.	Pittsburgh
	26	*Rockefeller, Lewis K.	Rep.	Chatham	S.C.	34	*Dunn, Matthew A.	Dem.	Pittsburgh
	27	Byrne, William T.	Dem.	Loudonville		1	Forand, Aime J.	Dem.	Central Falls
	28	Cluett, E. Harold	Rep.	Troy		2	*O'Connell, John M.	Dem.	Westerly
	29	*Crowther, Frank	Rep.	Schenectady		1	*McMillan, Thomas S.	Dem.	Charleston
	30	*Snell, Bertrand H.	Rep.	Potsdam		2	*Fulmer, Hampton P.	Dem.	Orangeburg
	31	*Culkin, Francis D.	Dem.	Oswego		3	*Taylor, John C.	Dem.	Anderson
	32	Douglas, Fred J.	Rep.	Utica		4	*Mahon, G. Heyward, Jr.	Dem.	Greenville
	33	*Lord, Bert	Rep.	Afton		5	*Richards, James P.	Dem.	Lancaster
	34	*Hancock, Clarence E.	Rep.	Syracuse		6	*Gasque, Allard H.	Dem.	Florence
	35	*Taber, John	Rep.	Auburn	S.D.	1	*Hildebrandt, Fred H.	Dem.	Watertown
	36	*Cole, W. Sterling	Rep.	Bath		2	Case, Francis H.	Rep.	Custer
	37	Kelly, George B.	Dem.	Rochester		1	*Reece, B. Carroll	Rep.	Johnson City
	38	*Wadsworth, James W.	Rep.	Geneseo		2	*Taylor, J. Will	Rep.	La Follette
	39	*Andrews, Walter G.	Rep.	Buffalo		3	*McReynolds, Sam D.	Dem.	Chattanooga
	40	*Beiter, Alfred F.	Dem.	Williamsville		4	*Mitchell, John R.	Dem.	Cookeville
	41	*Mead, James M.	Dem.	Buffalo		5	Atkinson, Richard M.	Dem.	Nashville
	42	*Reed, Daniel A.	Rep.	Dunkirk		6	*Turner, Clarence W.	Dem.	Waverly
	43	*Warren, Lindsay C.	Dem.	Washington		7	*Pearson, Herron	Dem.	Jackson
N.D.	1	*Kerr, John H.	Dem.	Warrenton		8	*Cooper, Jere	Dem.	Dyersburg
	2	*Barden, Graham A.	Dem.	New Bern	Tex.	9	*Chandler, Walter	Dem.	Memphis
	3	*Cooley, Harold D.	Dem.	Nashville		1	*Patman, Wright	Dem.	Texarkana
	4	*Hancock, Franklin W., Jr.	Dem.	Oxford		2	*Dies, Martin	Dem.	Orange
	5	*Umstead, William B.	Dem.	Durham		3	*Sanders, Morgan G.	Dem.	Canton
	6	*Clark, J. Bayard	Dem.	Fayetteville		4	*Rayburn, Sam	Dem.	Bonham
	7	*Lambeth, J. Walter	Dem.	Thomasville		5	*Summers, Hatton W.	Dem.	Dallas
	8	*Doughton, Robert L.	Dem.	Laurel Springs		6	*Johnson, Luther A.	Dem.	Corsicana
	9	*Bulwinkle, Alfred L.	Dem.	Gastonia		7	*Patton, Nat	Dem.	Crockett
	10	*Weaver, Zebulon	Dem.	Asheville		8	Thomas, Albert	Dem.	Houston
	11	*Burdick, Usher L.	Rep.	Williston		9	*Mansfield, Joseph J.	Dem.	Columbus
Ohio		*Lemke, William	Rep.	Fargo		10	Johnson, Lyndon	Dem.	Austin
		McSweeney, John	Dem.	Wooster	Utah	11	Poage, William R.	Dem.	Waco
		Mosier, Harold G.	Dem.	Cleveland		12	*Lanham, Fritz G.	Dem.	Fort Worth
	1	Dixon, Joseph A.	Dem.	Cincinnati		13	*McFarlane, William D.	Dem.	Graham
	2	Bigelow, Herbert S.	Dem.	Cincinnati		14	*Kleberg, Richard M.	Dem.	Corpus Christi
	3	*Harlan, Byron B.	Dem.	Dayton		15	*West, Milton H.	Dem.	Brownsville
	4	Vacant				16	*Thomason, R. Ewing	Dem.	El Paso
	5	*Kniffin, Frank C.	Dem.	Napoleon		17	Garrett, Clyde L.	Dem.	Eastland
	6	*Polk, James G.	Dem.	Highland		18	*Jones, Marvin	Dem.	Amarillo
	7	Aleshire, Arthur W.	Dem.	Springfield		19	*Mahon, George H.	Dem.	Colorado
	8	*Fletcher, Brooks	Dem.	Marion		20	*Maverick, Maury	Dem.	San Antonio
	9	Hunter, John F.	Dem.	Toledo		21	*South, Charles L.	Dem.	Coleman
	10	*Jenkins, Thomas A.	Rep.	Ironton	Vt.	1	*Murdock, Abe	Dem.	Beaver
	11	Claypool, Harold K.	Dem.	Chillicothe		2	*Robinson, J. Will	Dem.	Provo
	12	*Lamneck, Arthur P.	Dem.	Columbus		1	*Plumley, Charles A.	Rep.	Northfield
	13	White, Dudley A.	Rep.	Norwalk		1	*Bland, Schuyler O.	Dem.	Newport News
	14	*Harter, Dow W.	Dem.	Akron		2	Hamilton, Norman R.	Dem.	Portsmouth
	15	*Secrest, Robert T.	Dem.	Caldwell		3	Satterfield, Dave E.	Dem.	Richmond
	16	*Thom, William R.	Dem.	Canton		4	*Drewry, Patrick H.	Dem.	Petersburg
	17	*Ashbrook, William A.	Dem.	Johnstown		5	*Burch, Thomas G.	Dem.	Martinsville
	18	*Imhoff, Lawrence E.	Dem.	St. Clairsville		6	*Woodrum, Clifton A.	Dem.	Roanoke
	19	Kirwan, Michael J.	Dem.	Youngstown		7	*Robertson, A. Willis	Dem.	Lexington
	20	*Sweeney, Martin L.	Dem.	Cleveland		8	*Smith, Howard W.	Dem.	Alexandria
	21	*Cresser, Robert	Dem.	Cleveland	Wash.	9	*Flannagan, John W., Jr.	Dem.	Bristol
	22	Fleger, Anthony A.	Dem.	Parma		1	Magnuson, Warren G.	Dem.	Seattle
Okla.		*Rogers, Will	Dem.	Oklahoma City		2	*Wallgren, Monard C.	Dem.	Everett
	1	*Disney, Wesley E.	Dem.	Tulsa		3	*Smith, Martin F.	Dem.	Hoquiam
	2	*Nichols, Jack	Dem.	Eufaula		4	*Hill, Knute	Dem.	Prosser
	3	*Cartwright, Wilburn	Dem.	McAlester		5	Leavy, Charles H.	Dem.	Spokane
	4	Boren, Lyle H.	Dem.	Seminole		6	Coffee, John M.	Dem.	Tacoma
	5	Smith, Gomer	Dem.	Oklahoma City	W.Va.	1	*Ramsay, Robert L.	Dem.	Follansbee
	6	*Johnson, Jed	Dem.	Anadarko		2	*Randolph, Jennings	Dem.	Elkins
	7	*Massingale, Sam C.	Dem.	Cordell		3	*Edmiston, Andrew	Dem.	Weston
	8	*Ferguson, Phil	Dem.	Woodward		4	*Johnson, George W.	Dem.	Parkersburg



State	Dist.	Name	Party	Residence
W.Va.	5	*Kee, John	Dem.	Bluefield
	6	*Smith, Joe L.	Dem.	Beckley
Wis.	1	*Amie, Thomas R.	Pro.	Elkhorn
	2	*Sauthoff, Harry	Pro.	Madison
	3	*Withrow, Gardner R.	Pro.	La Crosse
	4	*Cannon, Raymond J.	Dem.	Milwaukee
	5	*O'Malley, Thomas	Dem.	Milwaukee
	6	*Reilly, Michael K.	Dem.	Fond du Lac
	7	*Boileau, Gerald J.	Pro.	Wausau
	8	*Schneider, George J.	Pro.	Appleton
	9	*Hull, Merlin	Pro.	Black River Falls
Wyo.	10	*Gehrmann, Bernard J.	Pro.	Mellen
		*Greever, Paul R.	Dem.	Cody

**Congressional Legislation.** It has been said of the first session of the 75th Congress that "Its most notable contribution to history was the rejection by the Senate of President Roosevelt's plan for the reorganization of the Supreme Court." One may also include the special session at the end of the year and conclude that the congressional sessions of 1937 were distinctive by reason of the number and the importance of the measures proposed by the President which were rejected. Important measures which were defeated included not only the court reorganization plan but also proposals to reorganize the executive branch, to set maximum hours and minimum wages for all employees of concerns engaged in inter-State commerce, to control agricultural production, and to extend the TVA principle to other portions of the country.

Important as were each of these measures in content, they were more important in number for they measured the depth of the congressional tide which for the first time since 1932 was beginning to run against the President. The President proposed thirteen major bills, of which Congress defeated six, partially agreed on two, and enacted but five in substantially the form in which they had been introduced. Various explanations of this unexpected rebellion have been offered. Chief among them were returning prosperity, the second-term tradition that the President loses legislative power with members of Congress, since he will not again run for office, and the crystallization of new political groups within the old parties. Post-session analyses agree that the true explanation probably lies in a combination of these possibilities.

Secondary to these basic considerations though still important in the chronicle is the fact that the failure of the President's program was due to recalcitrant elements within his own party rather than to the tiny Republican contingent in Congress. A good illustration is the Supreme Court bill against which every Republican Senator voted but none spoke. The opposition was more between Southern social and economic conservatism on the one hand and Northern metropolitan liberalism on the other than between Republican and Democrat. There are those who envisage these as the primary elements in a new and more basic cleavage of economic interests.

First to be considered must be the congressional effort to postpone the date of the reconsideration of some fundamental problems by means of the extension of the date of expiration of several of the emergency measures adopted in the first Roosevelt Administration. Included in these extensions were the Civilian Conservation Corps for three years, the Reconstruction Finance Corporation and the President's control of the monetary stabilization fund and the gold content of the dollar for two years, and the Soil Conservation Act for four years.

A sugar quota act, passed in the closing days of the session, provides for the annual determination by the secretary of Agriculture of the amount of sugar required by consumers in the United States, an allotment of 55.59% to domestic producers and 44.41% to foreign producers. The secretary is also empowered to make individual allotments whenever marketing conditions, a stable supply, or justice among the producers within given areas

may require. An important provision permits conditional payments to sugar farmers complying with conditions of production specified by the secretary. All sugar of domestic manufacture is subject to a graduated excise tax.

Further agricultural legislation took shape in a farm tenancy act which authorizes the secretary of Agriculture to make long-term loans to tenant farmers for the purchase of farms. Provision is made for loan appropriations of \$10,000,000 for the first year and \$50,000,000 for 1940 and each year thereafter. An important provision of the act requires the recipients to employ farm practices specified by the secretary. Of equal long-run significance is the authorization of the conduct of a program of land conservation and utilization including the retirement of submarginal lands. To administer its provisions the act creates a new agency in the Department of Agriculture to be known as the Farmers' Home Corporation.

Chief among New Deal concerns in the last session was the housing problem, and from it grew the most important legislation of the session. The act creates a U.S. Housing Authority in the Interior department which is authorized to issue \$500,000,000 of Government-guaranteed securities to finance loans to public housing agencies. The loans may not exceed 90% of the project cost nor may the annual subsidies for which provision is made exceed 80% of the total contributed by national and local agencies.

Students of American Federal government have been interested in recent years in the increased use of the inter-State compact as a method of coping with essentially regional problems. Seven such compacts received congressional consent during the last session. These compacts related to conditions of employment, the conservation of gas and oil, water-pollution and other major problems, in sharp contrast to the inter-State compacts of the past, which have usually been limited to minor matters such as boundaries and bridges.

Congress adopted but a small proportion of the reforms of the American judicial system which were urged upon it. The first measure to be enacted was that which permitted Supreme Court justices to retire on full pay once they had reached the age of 70 and had served for ten years. Later in the session, Congress agreed to a bill permitting the attorney-general to intervene in suits involving the constitutionality of Federal statutes and to appeal such cases directly to the Supreme Court. This act also restricted the use of the injunction with reference to the enforcement of congressional acts.

The Guffey-Vinson Act created a Federal Bituminous Coal Commission in the Interior department with broad powers to deal with such problems as price-fixing, marketing, and the regulation of business practices. Unlike the act of 1935 which the Supreme Court had invalidated, this act provided for labour only to the extent of asserting the right of employees to bargain collectively. Producers failing to become code members are subjected to a tax of 19.5% of the sale price of the coal.

The neutrality act of 1937 extends the provisions of the Act of 1935 for two years and also empowers the President to prohibit the carrying of articles to warring nations, and to require "cash and carry" purchasing by all belligerents. The arming of the American merchant vessels is specifically prohibited as is the travel of American nationals on the vessels of belligerents.

A Railroad Retirement Act was passed which provides for voluntary retirement at the age of 65 or at 60 if the employee has been in the service for 30 years or more. The pension system is to be administered by a Railroad Retirement Board on which labour, management, and the general public are to be individually represented.

A relief appropriation bill proposed by the President successfully weathered a bitter congressional storm. It appropriated



\$1,500,000,000, precisely the amount which the President had requested. A tax evasion study undertaken by the Bureau of Internal Revenue led to the passage of a "Tax Loophole" Act which sought to put an end to the ingenious tax evasion practices centring about the use of both domestic and foreign personal holding companies and deductions for losses from sales or exchanges of property, etc.

The special session which met on Nov. 15 did much discussing but had passed no important legislation when it finally adjourned at Christmas-time. (See also UNITED STATES: Congress.)

(G. C. S. B.)

**Connecticut**, one of the original States of the United States, popularly known as the "Nutmeg State" and the "Land of Steady Habits"; land area, 4,820 sq.mi.; population (U.S. census, 1930), 1,606,903, estimated by the Bureau of Vital Statistics, July 1, 1937, 1,766,947. Capital, Hartford, 164,072. Other cities of over 50,000 population in 1930: New Haven, 162,655; Bridgeport, 146,716; Waterbury, 99,902; New Britain, 68,128. Of the State's population 1,131,770 were urban, or 70.4%; 1,576,673 whites; 29,354 negroes; 1,222,267 native born; 384,636 foreign born.

**History.**—The principal State officers for 1937-39 were: governor, Wilbur L. Cross (Democrat, elected 1936 with 372,553 votes to 277,190 for his Republican opponent); lieutenant-governor, T. Frank Hayes; secretary of the State, C. John Satti; chief justice of the Supreme Court of Errors, William M. Maltbie (term, 1930-46). The only elections in 1937 were municipal, which showed no significant change in political trends. In the biennial session of the general assembly held in 1937, the Senate consisted of 26 Democrats, 9 Republicans; the House of Representatives of 167 Republicans, 100 Democrats.

The most important legislation of the session was a series of acts reorganizing the central administration of the State, which the governor characterized as "more vital and more comprehensive in character" than any group of acts passed since the adoption of the State Constitution in 1818. These acts, which greatly enlarge the powers of the governor, include the establishment of committees on inter-governmental co-operation, a legislative council, and a governor's cabinet, whose powers include certain functions in the interim between legislative sessions; of the Department of Finance and Control, administered by a commissioner, together with a budget director and a supervisor of purchases; of the Personnel Department to administer the merit system in the State's civil service; of the Department of Public Works; and of the Department of Welfare and the Public Welfare Council. The powers and duties of various State officers and commissions were redistributed and redefined to achieve more effective administration.

Provision was made for housing authorities to manage slum clearance projects; a State Traffic Commission, uniform traffic regulations on the highways, and the regulation of motor trucks; a 54-hr. week for employees of State institutions; unemployment compensation; service of women on juries; and no new taxation except adjustments in three schedules. The biennial budget, for

the first time, somewhat exceeded \$100,000,000; a bond issue of \$25,000,000 was authorized to fund the floating debt of about \$15,000,000 due to deficits in recent years and to provide new buildings for humane institutions. The funded debt already outstanding is fully offset by the sinking fund.

**Education and Charities.**—A new library and other buildings were being erected at the Connecticut State college at Storrs. The normal schools at Willimantic, New Haven, and Danbury were made State Teachers colleges with authority to confer the degree of Bachelor of Education. Since 1936 all new appointees at elementary and secondary school teachers must hold a bachelor's degree from a college or teachers college.

The State and local authorities co-operated effectively with the Federal Government in relief measures, and the general assembly designated the commissioner of welfare to administer all Federal aid granted to the State. The most important building projects under the bond issue mentioned above were a Veterans' Home at Rocky Hill, an additional School for the Feeble Minded at Southbury, and several more buildings at the new State hospital for mental cases at Newtown.

**Banking and Finance.**—For the year ending Sept. 30, 1937, the 73 mutual savings banks in the State showed an increase of \$25,006,139 in deposits and \$30,729,928 in assets. The number of depositors' accounts increased 26,278 to a total of 984,378 with total deposits of \$719,707,095. After Oct. 20, 1937, the bank commissioner limited the interest rate of these banks to 2½%. Hartford was the headquarters of most of 25 large insurance companies operating under Connecticut charters.

**Agriculture, Manufacturing.**—In 1935 Connecticut had 32,000 farms containing 2,000,000 ac. with products valued at over \$46,000,000. The most important crops are hay and tobacco. Dairying, poultry raising, fruit growing, and gardening are also important activities. Connecticut was, however, pre-eminently a manufacturing State. In 1935 the 2,840 factories employed 224,086 hands and produced goods valued at \$906,423,010. Metal industries, notably brass, were the most important. A goodly number of new or improved products were developed during the year. In 1937, until May, industrial activity improved in Connecticut above the average for the country. During the later months of the year there was steady decline but conditions continued somewhat better than the national average. Though there were many disputes between management and labour no serious or prolonged difficulties occurred.

(G. M. Du.)

**Connor, Ralph:** see GORDON, CHARLES WILLIAM.

**Conscription:** see ARMIES OF THE WORLD: *Military Service*.

**Conservation, Soil:** see SOIL EROSION AND SOIL CONSERVATION.

**Conservative Party.** When, in 1931, the party, under the leadership of Lord (then Mr. Stanley) Baldwin, co-operated with representatives of the Liberal and Labour parties in the formation of a National Government under the leadership of Mr. Ramsay MacDonald, the success of that Government's efforts proved it to be possible for statesmen, possessing an entirely different approach to politics to join together in applying a common mind to the nation's ills. Mr. Neville Chamberlain, the present premier, who leads the Conservative party today, has set out the following as the guiding principles of the National Government and the Conservative party: (1) to keep the peace; (2) to make Great Britain so strong that nobody shall treat her with anything but respect; (3) to maintain and increase the prosperity and activity of trade and employment; (4) to carry on steadily the improvement of the conditions of the people.



WILBUR L. CROSS, governor of Connecticut



Throughout these years of international anxiety, the National Government has exerted supreme efforts to promote peace in the world. Where armed conflict has unfortunately taken place, Britain has consistently exerted its influence to localize the issue and so prevent it from involving other nations. The Conservative party supports the Government's endeavours to strengthen the authority of the League of Nations; to seek solutions of outstanding problems by means of economic and political collaboration; to restore faith in the integrity of treaties; and by strengthening the foundations for a common understanding to pave the way for a reduction in the burdens of armaments by means of international agreement. In particular, the party opposes the conception of rival ideologies and the grouping of powers into opposing blocs according to their different systems of Government.

Pending an international agreement which will give all countries a greater sense of security, the Conservative party is convinced that Great Britain must take the necessary steps to strengthen her defences in order to guarantee the safety of her world-wide communications and also enable her to fulfil her international obligations, holding that the present inadequacy of the system of collective security makes it all the more essential that Britain should repair the gaps in her defences which were caused by years of inactivity when she was striving by example to bring about international disarmament.

In its view of this question of peace and security, Conservative policy inevitably concerns itself with the position and attitude of the Empire. The Home Country is the connecting link between the various members of a great Commonwealth of Nations. They possess in common democratic government and a great and lasting love of liberty and justice. The influence they may exert as a factor in maintaining world peace cannot be exaggerated. Therefore, conservatism holds that everything possible must be done to maintain and strengthen the ties which bind Britain and the Dominions together.

The policy of the Conservative party with regard to domestic affairs may be stated with equal simplicity. It contends that the maintenance and enhancement of the industrial revival is dependent upon the increase and acceleration of Britain's already striking advance in social legislation, and that the recent improvement in the numbers of employed is based on the element of confidence, which in turn can be founded only on sound finance.

Where conservatism remains, and will remain conservative, is in its rigid conception of the elementary economic laws. It holds that to saddle industries with burdens they are unable to bear is the road neither to good trade nor good government; and that real social improvements can come only as the accompaniments of real industrial improvements.

The annual conference of the party was held at Scarborough on Oct. 7 and 8, under the chairmanship of Mrs. Clara Fyfe. On the second day, a memorable speech was made by the prime minister, Mr. Chamberlain, in the course of which he made extensive reference to the whole international situation. (D. HA.)

**Contract Bridge.** There was little advancement in the science of contract bridge bidding or play in 1937; no new legislation was effected; no significant competitions were played. In other years marked by the introduction of nothing generally interesting to adherents of the game, a consequent decrease in the amount of bridge-playing was noticeable. In 1937, according to all available evidence, no such decrease resulted. In Great Britain and the United States, indeed, a considerable increase was noted.

Statistics on which any gauge of the popularity of contract bridge is based are: (1) the number of playing cards sold and

(2) the number of books of bridge instruction sold. Manufacturers of playing cards report that sales in 1937 were approximately the same as in 1936. Publishers of books on contract bridge in 1937 exceeded their 1936 sales by more than 30%.

The laws prepared by the Whist Club of New York, the Portland Club of London and the Commission Française du Bridge of Paris in collaboration, which became effective Mar. 31, 1935, remained in force and were unchanged. These clubs announced with the introduction of that code of laws that no change would be made before 1940. A different code of laws governs tournament bridge, and the right to make changes is not so restricted, though no immediate change is contemplated. In the United States and in nearly every country of Europe the tournament laws are promulgated by national associations which are members of the International Bridge League, but not all of the European countries have adopted wholly the code of tournament laws which was prepared by an American committee. However, this code was used by the International Bridge League at its tournament at Budapest in June 1937, in which 18 different national bridge associations were represented, an Austrian team winning the championship and an American team finishing second.

The methods of bidding which were generally adopted in 1935 remained substantially unchanged and grew in popularity. Their outstanding feature is that there are almost no artificial bidding conventions included. An artificial bid is one which reveals some specific holding of high cards or suit-lengths by the bidder, the true meaning of the bid having been previously explained to the bidder's partner and opponents. A natural bid is one which reveals only the bidder's willingness to play the hand for the number of tricks and at the trump suit named in the bid. Average players and nearly all advanced players prefer to use a bidding system which emphasizes natural bids. Various systems involving the use of artificial bids were popular in Great Britain and America four years ago, but have gradually been abandoned until today they are seldom encountered in homes, clubs and tournaments. So great has been the opposition to artificial bidding, especially during 1937, that a bidding convention called the "asking bids," introduced into the Culbertson (Approach-Forcing) system of bidding in 1936 and highly recommended, is in 1938 withdrawn from published books on that system except for brief mention, and is now proposed for use only by very experienced players. The only such bidding convention which remains in general use is the "4-5 notrump convention" with which aces are shown for slam-bidding purposes.

It is perhaps due to failure to make changes in laws and bidding methods that the popularity of contract bridge has been maintained. While bridge analysts were still experimenting with bidding methods, and made frequent changes in their bidding systems, the average player was frequently called upon to forget rules he had already learned and accept new rules. Many players, unwilling to undertake the expense and trouble of learning new methods, stopped playing the game. Now that they are secure in the belief that bidding methods have become largely standardized, they play more regularly. The total number of bridge players in the world, 66% of whom are in America and Great Britain, may be estimated at the close of 1937 as 29,000,000. This is a higher figure than any authoritatively advanced before.

Bridge competition, from which championship titles and ranking of players must come, is better organized than in other years. In the United States, two factions which had been independently conducting championship tournaments united, and the resultant single organization, the American Contract Bridge League, is in a position to provide authentic championship titles and ranking of players. In Great Britain, two similar factions still oppose one another, calling themselves the British Bridge League and the



National Bridge Association. Only the former is a member of the International Bridge League, but the fact that many of the best-known players are allied with the latter association leads to disputed national rankings. In other countries the association which belongs to the International Bridge League is generally alone or predominant in the field.

The most important development in 1938 will probably not be in laws, in bidding or in play, but in the elimination of politics from the management of contract bridge tournaments and legislation, particularly in Great Britain. (E. CUL.)

## Conway, William Martin Conway,

1ST BARON of Ailington (1856–

1937), British mountaineer and art critic; born at Rochester, England, April 12, 1856; died April 19, 1937. For a biographical notice, see *Encyclopædia Britannica*, vol. 6, p. 363. He was created a baron in 1931. His later publications included: *The Sport of Collecting* (1914); *The Crowd in Peace and War* (1916); *Mountain Memories* (1920); *The Van Eycks and their Followers* (1921); *Art Treasures of Soviet Russia* (1925); *Episodes in a Varied Life* (1932); *A Pilgrim's Quest for the Divine* (1936).

**Co-operatives:** see FARMERS' CO-OPERATIVES; MARKETING; RETAIL SALES.

## Copper.

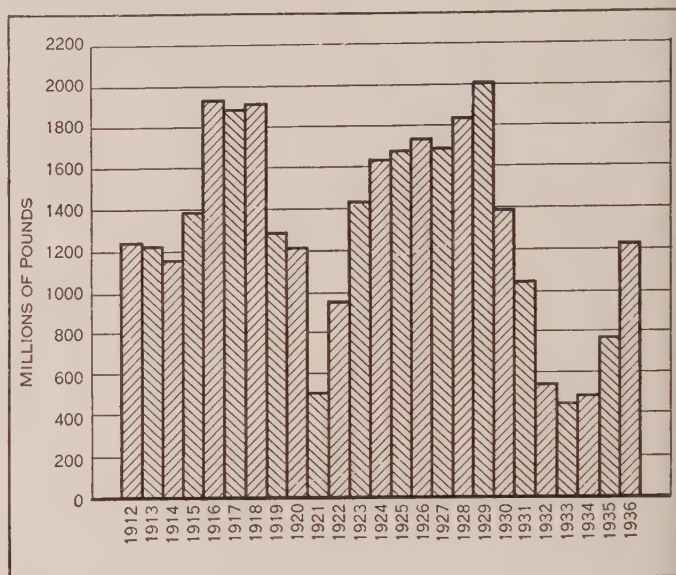
Nine copper-producing countries with outputs, present or past, in excess of 50,000 tons, accounted for 90% of the world total in 1929, and 88% in 1936, which is only a comparatively small change, but in the meantime there has been a radical change in the status of many of the individual producers. World output as a whole decreased by 53% between 1929 and 1932, increasing by 1936 to 87% of the 1929 high; of this total, production outside of the United States dropped only 26%, and recovered to 23% above 1929, while the United States output declined by 75%, and recovered to only 60% of the former high; as a result, the United States proportion of the total has decreased from 49% to 33%. This change, however, has not been due to any physical inability to produce at the former rate, but to the general industrial depression, complicated by the discovery of rich new sources in Rhodesia and Canada, and the extension of Russian operations, all of which combined to divert from the United States a good share of its former export market. The United States still retains the position of leading producer, with 33% of the total, followed by Chile with 15%, Canada 12%, Rhodesia 8%, Belgian Congo 6%, Soviet Union and Japan each 5%, and Peru and Mexico each 2%.

World Production of Copper  
(In thousands of metric tons)

	1929	1932	1934	1935	1936
Belgian Congo . . .	135.5	54.0	110.1	107.7	95.7
Canada . . . . .	109.9	113.7	166.4	188.9	186.1
Chile . . . . .	316.8	103.2	256.7	267.1	256.0
Japan . . . . .	75.5	71.9	67.0	69.3	78.1
Mexico . . . . .	78.7	34.1	47.3	41.6	32.6
Peru . . . . .	54.4	21.4	27.7	29.7	32.9
Rhodesia . . . . .	5.9	73.0	145.6	148.2	140.0
U. S. S. R. . . . .	25.8	30.7	44.1	63.2	83.0
United States . . .	931.1	231.8	217.8	344.8	557.9
World Total . . .	1,921.6	905.5	1,266.3	1,459.5	1,667.7
Ex U. S. . . . .	990.5	673.7	1,048.5	1,114.7	1,109.8

Belgian Congo, Chile and Peru have decreased in output, but so nearly in the same ratio in which world output has changed that the percentage of the total furnished by each has not been materially altered, and the same is true of Japan, with a slight in-

crease; the greatest increase has been in Rhodesia, which rose from 0.3% in 1929 to 8% in 1936, followed by Canada, rising from 6% to 12%, and the Soviet Union, from 1% to 5%. The only other material decrease outside of the United States was Mexico, dropping from 4% to 2%.



COPPER PRODUCED in the United States: smelter output from domestic (including Alaskan) ores

Rearmament activities have been largely responsible for heavy increases in production in 1937. Preliminary estimates indicate a world output of about 2,100,000 metric tons, an increase of 26% over 1936; among the larger producers, Chile led with an increase of more than one-half, while the United States, Canada and the African sources stood at about one-third above 1936. Toward the end of the year, however, there was considerable restriction in output, the high point having been reached in the second quarter.

All of the countries listed in the table, with the exception of the United States, Japan and the Soviet Union, are comparatively small consumers of copper, and hence produce mainly for export. The chief copper consuming countries, in order of importance, are the United States, the United Kingdom, Germany, the Soviet Union, Japan and France, which cover nearly 90% of the total consumption. The United States is the only major consumer with an export surplus; all others are dependent on imports for a large proportion of their supply. On the face of the returns, during the past four years, imports into the United States have averaged 55% of the domestic output, and exports 77%, leaving a net export of 22%; however, the majority of the gross imports consists of ore, concentrates and blister copper imported under bond for smelting, refining, and re-export; deducting these items from both sides gives a net import for consumption equal to 9% of production, and a domestic export of 31%, leaving the same export balance of 22%. In spite of the fact that a material proportion of the output is exported, consumption of copper in the United States far exceeds the new copper supply, the remainder coming from secondary metal recovered from previous use, a source which yielded a larger amount of copper during the depression years than was obtained from the primary production.

The United Kingdom, the second largest consumer, has only a nominal output of a few thousand tons, and secures practically its entire supply from imports, a growing amount of which is re-exported. Most of the imports are from Empire sources, though the United States and Chile furnish appreciable amounts. Ore and matte make up only about 10% of the imports, the remainder being divided in about equal proportions between rough copper



and electrolytic. German refineries are now producing about 200,000 tons annually, about 85% of which comes from imports, 60% as crude copper and 25% in ore; exports are negligibly small. Russian production supplies about two-thirds of the demand, and imports one-third, while in Japan production is slightly less and imports proportionately higher. France has practically no domestic output, and imports almost the entire supply. (See also METALLURGY.) (G. A. Ro.)

**Copra:** see COCO-NUTS.

**Coptic Church.** This ancient Christian church of Egypt, with its branch established in Ethiopia by St. Athanasius about A.D. 326, after many years of quiescence was profoundly stirred in the latter half of 1937. The metropolitan of Ethiopia has always been an Egyptian appointed and consecrated by the Coptic patriarch of Egypt, but, after the occupation of Abyssinia by the Italians, the latter, in May 1937, sent the metropolitan, the Abuna Kyrillos, to Rome. Here ineffectual attempts were made to obtain his consent to the separation of the churches and he eventually returned, not to Abyssinia, but to Egypt. In September the Italian authorities announced that, while the metropolitan would be divested of certain powers, he would continue to be elected as before and consecrated by the patriarch, but on Dec. 1 the Abuna Abraham (aged over 70 and blinded by Italian gas) was invested as metropolitan at Addis Ababa in the presence of Marshal Graziani, the viceroy. Strong exception was taken to this, both by the church on canonical grounds, and by the Egyptian Government, which held it to raise diplomatic issues; but within a few days the new metropolitan consecrated three bishops and was himself proclaimed patriarch of an Italian-East African autocephalous church. On Dec. 12 Italy officially notified the Egyptian minister of foreign affairs to this effect.

On Jan. 4, 1937, the viceroy had opened, in the presence of the Abuna Kyrillos, the new Church of Mariam in Addis Ababa, the building of which, interrupted by the war, had been completed by the Italian Government.

**Corn.** The above-average corn crop in the United States in 1937 acutely changed the world's corn situation from that of the last several years since it returned the largest producer, the United States, again to the status of a corn exporter instead of an importer of maize. During the eleven months from Nov. 1, 1936, to Sept. 30, 1937, the United States imported 95,400,000bu. of corn and in that period was second only to the United Kingdom in the volume of maize imports. With the harvest of the 1937 crop of 2,644,995,000bu. the States resumed exports, although the Federal Government advanced loans of as high as 50 cents a bushel to growers who might wish to hold their crops either for live stock feeding or for higher prices. The 1937 production in the United States was 75 per cent larger than the short crop of 1,507,089,000bu. in 1936. The five-year (1928-32) average was 2,544,772,000bu. and the production of the disastrous drought year, 1934, was 1,478,000,000bu., which resulted in the United States becoming an importer of maize. The heaviest production since 1913 was that of 1920, 3,208,584,000 bushels.

The amount of corn harvested in 1937 in the United States was estimated by the Department of Agriculture as 2,343,258,000 bu., the remainder having been used for silage or forage.

Production of other corn-exporting countries in 1937 was given by the International Institute of Agriculture as, Argentina, 359,619,000bu., compared to 397,622,000 in 1936 and a five-year average of 304,862,000 bushels. The Danubian countries of Ru-

mania, Yugoslavia, Hungary and Bulgaria produced 515,682,000bu. in 1937, 561,281,000 in 1936 and a five-year average of 470,261,000 bushels. The Rumanian Government, however, has forbidden exports because of a short crop, but Yugoslavia and Hungary have a substantial surplus for export from record crops. Manchoukuo and Turkey had a combined crop of 5,200,000bu. in 1937, compared to 11,900,000 in 1936 and a five-year average of 6,100,000. Excluding Argentina, the Institute totals the crop of the exporting countries in 1937 at 3,454,200,000 bushels. This however, includes European countries which grow a part of their corn requirements and had a crop of 162,600,000bu. in 1937.

Of the 19 principal countries that import corn, eight produce none. These include the United Kingdom, which in the crop year of 1936-37 imported 144,144,000 of the 361,800,000bu. imported by all 19. It is estimated that import requirements will be about the same for 1937-38.

Italy now requires 10 per cent corn meal in all bread, in order to build up a wheat reserve.

Germany requires 7 per cent corn meal in bread and Portugal about 12 per cent, according to the quality of the bread, and this ratio may be raised to 20 per cent at the discretion of the minister of agriculture. While in some European countries there is an abundance of potatoes and root crops that may be used as live stock feed there is also a shortage of certain forage crops which offsets this advantage and indicates imports of maize.

Canada, which imported 18,369,000bu. of corn in the crop year of 1936-37 had a production of 6,492,000bu. in 1937, compared to 6,083,000 in 1936 and a five-year average of 6,025,000 bushels. In the United States normally about 80 per cent of the corn crop is fed to live stock on the farms.

There is, however, a shortage of about 10 per cent of live stock on United States farms. In the Argentine 80 per cent of the corn crop is grown for export.

The average yield of corn in the U.S. per harvested acre in 1937 was 28.2bu., compared to 16.2bu. in 1936. The ten-year average (1923-32) yield per acre was 25.4 bushels. The average 1937 acre yield was the highest since 1923, despite droughts in Nebraska, Kansas and South Dakota. The total acreage of corn harvested for all purposes in the United States in 1937 was 93,810,000 acres, compared to 93,020,000 acres in 1936. The five-year average is 103,419,000 acres. The Department of Agriculture estimates that 96,483,000 acres were planted to corn in 1937, while in 1936 the total acreage planted was 100,599,000, drought having caused a large abandonment of acreage by harvest time.

Corn from 5,140,000 acres was harvested for silage in 1937 in the U.S. In 1936 there were 8,309,000 acres that went into silage. The estimated production of corn silage in 1937 was 35,334,000 tons. This was a much heavier yield from a smaller acreage than in 1936 because of the larger crop from favourable growing weather. Silage production in 1936 was 32,419,000 tons.

Corn harvest time of the world is: January, New South Wales; March and April, Argentina; April and May, South Africa; September and October, all European countries; October and November, United States and Canada. (See also AGRICULTURE, *Technical Developments*; CEREALS.) (S. O. R.)

**Corn Borer:** see ENTOMOLOGY.

**Cornell University.** A non-sectarian, co-educational institution in Ithaca, N.Y., founded in 1865 and incorporated as a land-grant college under the Morrill Act of 1862. The university comprises the endowed schools and colleges of arts and sciences, engineering, architecture, law, and medicine (the greater part of which is in New York city), and the State-supported colleges of agriculture, home economics, and veterinary





SCENE FROM THE CORONATION of George VI of England (left centre) in Westminster Abbey May 12. Queen Elizabeth is seated at the right. In the royal box are, left to right, Queen Elizabeth's parents, the Earl and Countess of Strathmore; the Duchess of Kent, the Duchess of Gloucester, Queen Maud of Norway, Queen Mary, Princess Elizabeth, Princess Margaret Rose, Princess Mary

medicine. Two experiment stations, at Geneva and at Farmingdale, are operated in connection with the college of agriculture. Degrees for advanced study other than professional are awarded through a graduate school. There were 6,439 students, of whom 1,407 were women, enrolled in the autumn of 1937. The faculty includes 305 professors, 224 assistant professors, and 339 instructors. There are 122 extension workers in agriculture, and 79 in home economics. Important administrative changes became effective in the summer of 1937 through the retirement of Dr. Livingston Farrand, president since 1921, and the resignation of Provost A. R. Mann, who became vice-president of the Rockefeller General Education Board. Edmund Ezra Day, Ph.D., LL.D., succeeded Dr. Farrand as president. Productive funds on June 30, 1937, amounted to \$30,975,376, while income for current expenses was approximately \$8,339,285. Gifts received during the fiscal year totalled \$1,473,870. Land and buildings were valued at \$18,790,797, and equipment at \$7,698,897. (E. E. D.)

**Coronation.** The inauguration of King George VI at Westminster Abbey on May 12, 1937, took place under conditions different from those which attended any previous coronation. The increased facilities for the dissemination of news and pictures, before and after the event, resulted in the ceremony receiving the widest prominence in newspapers and periodicals everywhere, and the radio enabled the peoples of both the Empire and the world at large to keep in close touch with plans and preparations. On the actual day, they were able to hear the service, a privilege hitherto enjoyed by none other than those present inside the church. Furthermore, there has been much recent enquiry into the history of the ceremony, which has persisted unchanged in its essentials from time immemorial, though

constantly altered in detail to suit the temper of the period, and material was thus provided for many articles and books which quickened the general appreciation of the ceremony's historic and romantic aspects. There were also the unprecedented circumstances in which King George acceded to the throne, and the fact that his queen was the daughter of a British noble house. It was the first time for four centuries that a lady belonging to that sphere had shared the heritage of an English monarch.

The arrangements for the control of spectators on the day were carried out on a scale far beyond anything previously attempted, the latest scientific methods being applied to the organization. The faster and more extensive transport available for passengers led to an immense flow of visitors into London from all parts of the globe, and hundreds of thousands were able to watch the processions to and from the church in a greater degree of comfort than ever in the past. Throughout the proceedings, the radio enabled spectators to hear something of all that they could not see.

The coronation service itself, based on traditions going back a dozen centuries and founded on customary rites whose origin is still more ancient, has alone survived the test of modern criticism in so far as it should be regarded as the proper ceremonial for the sacring of a 20th-century Christian ruler. Wonder at such remarkable continuity greatly enlivened the general interest in the event.

The outcome of all these factors was that the imagination of the whole world was stirred, and in England an intense enthusiasm was aroused. The latter manifested itself especially in the scene at outstanding moments during the procedure on the day, such as the appearance of the King and Queen at the beginning of their journey from Buckingham Palace to the Abbey; their arrival



at the church; the placing of the crown of St. Edward on the King's head, and the culminating point in the ceremony when the King, crowned and invested with the ornaments of kingship, was raised upon his throne in the midst of his people. No useless effort need be made to describe these scenes; for there are few throughout the world who did not, thanks to the miracle of wireless, receive an impression of them at least better than could be conveyed in words.

The chief tendency of the changes wrought in the coronation ceremony has been to shorten it. In the 17th century, the procession from the Tower of London to Westminster on the day prior to the event was discontinued. Since the crowning of George IV in 1821, the elaborate banquet which followed the service has not been held.

The former part of the procedure is now represented by the procession from the Palace to the Abbey; but nothing has taken the place of the latter. There are many who would like to see the banquet resumed, and it was certainly a most interesting and colourful occasion; for, during its course, many ancient and picturesque services were performed, some of them, as that of the King's Champion, with great pomp. Moreover, the procession into the church then began in Westminster hall, instead of in the annex as now, and returned there after the service, thus allowing a far larger number of people to see it.

The most important alteration made on the occasion under notice was the revision of the oath. The origin of the oath was in the anxiety of the people to ensure so far as possible that they should be justly ruled, and to this end the King was asked to make certain promises, as, indeed, he still does, and not until he had done so was he anointed, crowned and invested with the emblems of kingship.

Various circumstances throughout the centuries have led to some amendment being necessary to the oath, and not least of these is the Statute of Westminster which changed the status of the King's dominions. The Irish Free State also had to be considered.

Thus, King George V swore to govern "the people of this United Kingdom of Great Britain and Ireland and the Dominions thereto belonging, according to the statutes in Parliament agreed on and the respective laws and customs of the same"; but for King George VI the passage read: "the peoples of Great Britain, Ireland, Canada, Australia, New Zealand, and the Union of South Africa, of your possessions and other territories to any of them belonging or pertaining, and of your empire of India, according to their respective laws and customs." The promise involved in the third question was changed so that the King undertook to "maintain the laws of God and the true profession of the Gospel" throughout his domains; but to maintain "the Protestant Reformed Religion established by law," in England and Scotland only, and "to preserve inviolably the settlement of the Church of England, and the doctrine, worship, discipline and government thereof, as by law established in England," in England alone.

In this way, the oath has been brought up to date, and continues to represent—as it was always meant to do—the will of the people, and, in the words of Professor Trevelyan, it "is still a vital and growing reality."

Another alteration in the service was the omission of the sermon.

Notwithstanding these revisions, King George VI was crowned according to ancient rites which remain fundamentally unchanged, and amid demonstrations of loyalty which significantly indicate the strength of his throne. (See also PHILATELY.) (J. G. N.)

**Cosmetics:** see SOAP, PERFUMERY AND COSMETICS.

**Cosmic Rays:** see PHYSICS: Cosmic Rays.

**Costa Rica,** a Central American republic; language, Spanish; capital, San José (pop. 56,000); president, León Cortés. The area is 23,000 sq.mi.; population (estimate 1935) 578,040. The year 1937 was marked principally by efforts of President Cortés to put the country on a more solid basis through a debt adjustment with foreign bondholders, a reciprocal trade agreement with the United States, and stimulation of the coffee industry. There are 450mi. of railways, and highway, and river communication. In 1936, imports (largely foodstuffs and manufactured goods) aggregated \$9,388,000 in value, principally from the United States (39%) and Germany (31.7%). Imports from Japan increased sharply in 1937 and caused threats that a near-prohibitive duty would be imposed, inasmuch as Japan bought practically nothing. Exports in 1936 were valued at \$8,825,000 (coffee, 56.8%, and bananas, 35.5%), to the United States (41.7%), Great Britain (24.5%), and Germany (21.2%). The principal products are coffee and bananas, the mainstays of the country's economy. Cacao is also produced. Some gold is mined. The monetary unit is the colon (value: 17½¢ U.S.). The national budget for 1937 was \$4,009,207.91, of which over 20% was allotted to education. There are over 600 schools with more than 60,000 enrolment. (L. W. BE.)

**Cost of Living.** The upward trend of the cost of living after 1933 continued into 1937, but only in France and Norway (excluding war areas) did 1937 indexes of food prices go higher than in 1929. In most nations 1937 food prices were higher than 1936; but the official indexes of Germany, Austria, and South Africa show very little change. The increases ranged around five points in the United States, Great Britain, Australia, Bulgaria, Estonia, Hungary, Ireland, Netherlands, Poland, and



AN UNWELCOME PASSENGER insists on riding. Cartoonist Jensen's way of saying in *The Chicago Daily News* that legislative devices to raise wages also elevate prices



## Indexes of Retail Food Prices in the United States, United Kingdom and Certain Other Countries

(This table is rearranged and condensed from a table in *The Monthly Labor Review*, January 1938, pp. 265-267.  
Official sources of data and scope of data shown in *The Monthly Labor Review* table.)

Year	United States	Canada	United Kingdom	France	Germany	Italy	Norway	Sweden	Australia	New Zealand	South Africa
	1923-25 =100	1926 =100	July 1914 =100	Jan.-June 1914 =100	Oct. 1913-July 1914 =100	Jan.-June 1914 =100	July 1914 =100	July 1914 =100	1923-27 =100	1926-30 =100	1914 =100
1929 . . .	104.7	106.4	154.	584.	154.5	542.8	158.0	150.0	104.7	101.3	115.3
June 1933	64.9	62.2	114.	532.	113.7	402.9	130.0	120.0	75.9	72.3	98.9
June 1936	83.4	71.3	126.	514.	122.8	431.8	145.0	134.*	81.8	86.9	103.0
1937											
January	84.6	75.2	136.	..	121.4	454.0	148.0	133.	85.7	91.0	100.1
February	84.5	75.6	135.	..	121.9	459.1	150.0	..	84.8	91.6	100.4
March	85.4	75.7	135.	604.	122.3	455.3	152.0	..	84.2	92.3	101.3
April	85.6	76.3	135.	..	122.3	457.8	155.0	137.	84.8	94.3	102.2
May	86.5	76.6	136.	..	122.4	459.6	156.0	..	84.6	95.1	103.0
June	86.3	76.4	136.	629.	122.9	464.9	157.0	..	84.7	94.5	102.9
July	85.9	77.2	140.	..	124.5	481.0	161.0	138.	85.3	95.4	102.3
August	85.5	79.1	140.	..	124.0	486.0	161.0	..	85.2	95.6	101.6
September	85.8	78.3	140.	..	122.0	502.6	163.0	..	..	..	101.1
October	84.9	78.9	143.	..	121.3	..	..	140.	..	..	..
November	83.6	..	..	..	..	..	..	..	..	..	..

The number of articles included in the indexes for the various countries varies widely. The indexes are not absolutely comparable from month to month over the entire period for certain countries, owing to changes in the numbers of articles included at different dates.

\*July.

Sweden, and were definitely below 5% in Canada, Australia, and Czechoslovakia. But Great Britain, Finland, Belgium, Norway, and Switzerland experienced almost a 10% increase in food prices in 1937.

The inclusion of rent, clothing, fuel and light, and sundries would change the picture somewhat. The British Ministry of Labour (*The Ministry of Labour Gazette*, Jan. 1938, p. 5), which furnishes the most complete cost of living picture available in Jan. 1938 for the year 1937, reports that while food prices in Great Britain increased nearly 8% in 1937 the cost of living of wage earners increased but 5%. Rents did not rise measurably, fuel and light rose less than food costs, and clothing no more than did foods. In Canada, food prices increased sharply from an average index number of 108.5 in 1936 to 117.6 in 1937; but fuel, light and rent remained practically constant and clothing increased but slightly (*The Labour Gazette*, Department of Labour, Canada, Jan. 1938, p. 115).

The detailed figures of the United States, Canada and the United Kingdom reveal that the trends of prices of different foods varied considerably during 1937. In Great Britain, for instance, all major food items became more expensive except fish, margarine, and potatoes. In the United States, meats were approximately 10% higher in Nov. 1937 than in Nov. 1936; dairy products but 4-4% higher; beverages, chocolate, sugars and sweets little higher; and fruits and vegetables, eggs, fats and oils lower.

The accompanying table shows the relative trends of retail food prices in 11 countries from 1929 through Oct. 1937. The period used as a base by each country is indicated and reference is given to an article in the *Monthly Labor Review* from which information about additional countries may be obtained. (See also PRICES, STATISTICS OF.)

BIBLIOGRAPHY—Readers interested in additional information are referred to current issues of the *Monthly Labor Review* (U. S. Bureau of Labor Statistics), the *Ministry of Labour Gazette* (British Ministry of Labour), and *The Labour Gazette* (Department of Labour, Canada). (D. D. L.)

**Cotton.** The world produced and used more cotton in 1937 than ever before. Production was estimated in round numbers at 38,000,000 bales for the calendar year; consumption, 31,000,000 bales. The cotton year, however, begins Aug. 1 and statistical data are reported as of each twelve months following that date. The previous high record, both in production and

consumption, was for the immediately-preceding crop year of 1936-37 when world production was 30,700,000 bales and consumption, 30,991,000 bales. The third largest annual production for the world was 27,930,000 bales in 1926-27.

During recent years, while the U.S. was restricting production by granting subsidies on acreage withdrawn from cotton growing, South America has rapidly extended its acreage, especially in Brazil and to some extent in Argentina, and has become one of the world's important cotton producers. While the acreage planted to cotton in Asia and Africa has been expanded to some extent, the larger crops in those areas are chiefly the result of increasing the yield per acre. In 1936-37 India, Egypt, China, Russia and Brazil had high-record crops. These conditions of increased acreage and higher yields have resulted in making cotton more abundant and cheap, thereby encouraging the manufacture of cotton products and their largest use thus far in world history.

The carryover of cotton from 1936-37 to the current year of 1937-38 was 13,313,000 bales of 478lbs., net, to the bale. Of this 6,235,000 bales was U.S. cotton. The remainder, 7,078,000 bales, was the total carryover from all other cotton countries.

**Production by Countries.**—For 1937-38 and the preceding year the International Institute of Agriculture gives the following figures of production in the principal cotton-growing countries. To facilitate comparison the 1936-37 figures are here placed in parentheses. The Institute's data are for bales of 478lbs., net, and are as follows:

United States, 18,746,000 bales (12,407,000). India, 4,547,000 bales (4,497,000). Russia, 3,482,000 bales (3,551,000). Egypt, 2,282,000 bales (1,887,000). China, 3,225,000 bales (3,914,000). North Brazil, 868,000 bales (640,000). Mexico, 326,000 bales (359,000). The 1936-37 production for South Brazil was 1,201,000 bales and for Argentina, 143,760 bales. The forthcoming 1937-38 crop in the Argentine promises still larger production because of increased acreage.

The five-year average, annual production of cotton for the period ending in 1935-36 is reported by the International Institute of Agriculture as follows: United States, 12,684,000 bales. India, 3,768,000 bales. China, 2,434,000 bales. Russia 1,947,000 bales. Egypt, 1,491,000 bales. North Brazil, 549,000 bales. South Brazil, 480,000 bales. Argentina, 238,000 bales. Mexico, 209,000 bales.

**United States.**—The largest cotton crop ever produced in the



U.S. was that of 1937, which, the U.S. department of agriculture estimates, was 18,746,000 bales, from 33,930,000 acres. The previous high record was 17,978,000 bales from 47,087,000 acres in 1931. In 1931 production was 17,097,000 bales from 38,705,000 acres. Other high production years were 1914 when 16,135,000 bales were produced from 36,832,000 acres, and 1925 when production was 16,104,000 bales from 48,090,000 acres. In no years, other than the foregoing, has U.S. cotton production been as much as 15,000,000 bales, although it came close to that figure in 1928 and in 1929. For 1936 production was 12,407,000 bales. It was 10,638,000 bales in 1935. The lowest yield since 1921 was 9,636,000 bales in 1934. The years 1933 and 1932 were average; 13,049,000 and 13,003,000 bales, respectively.

The record U.S. crop in 1937 from a comparatively small acreage was owing to favourable growing conditions, a larger use of fertilizers and to the Government's soil conservation program to withdraw land from cotton and adopt soil-building practices of liming, terracing hillside fields to prevent erosion and planting legumes and crops other than cotton, which has long been the great cash crop of the South. Previously the Government had suspended its policy of granting loans to farmers to enable them to hold their cotton off the market when prices were low. Instead a direct subsidy was granted for acreage withdrawn from cotton. Government loans were resumed late in 1937. In 1936-37 the Government held 3,159,675 bales taken for unpaid loans, but this had been reduced to 1,677,559 bales by the beginning of the 1937-38 year.

**Cottonseed.**—The huge world cotton crops have directly affected world markets for vegetable oils and animal fats since cottonseed oil is widely used in foods and various industrial processes and competes actively with butter, lard, copra and soybean and peanut oil, marine oils and other similar products. No reliable data are available for current world production, as the grinding and pressing of the seed from a crop are not completed until after seed requirements for the succeeding planting are met. In the U.S. 1,003,457,968 lb. crude cottonseed oil were produced from the grinding of the small crop between August 1, 1936, and January 1, 1937. (See also VEGETABLE OILS AND ANIMAL FATS.)

(S. O. R.)

**Cotton Manufacture.**—Although great strides have been made in the manufacture of piece-goods from synthetic fibres, cotton comprises by far the bulk of world production. It is the cheapest form of clothing produced, and as a result, is the lowest-priced and most economical form of wearing apparel for the millions of low-wage earning peoples in world countries. The four largest manufacturing countries are the United States, United Kingdom, India, and Japan. The United Kingdom and Japan export a large proportion of their output. The United States' production is mostly for home consumption. India was formerly in this category, but latterly she has been able to increase her exports, especially to British colonies, and now is looming large as a competitor of the United Kingdom.

The world production of cotton piece-goods has shown little change in the past few years. According to a census of cotton looms taken by the International Federation of Master Cotton Spinners' and Manufacturers' Associations, the total number of world looms in three years to Jan. 1, 1937 (the date of the census and the latest figures available) showed an increase of only 10,526. Looms in Great Britain had declined by 83,191 in three years, and in the United States by 40,181. These decreases were offset by increases in Russia, Japan, China, India, and in certain less important countries. It is obvious, therefore, that eastern countries, chiefly on account of relatively low wage rates and longer hours worked in the mills, are making steady progress in the production of cotton goods, whereas the tendency in Europe,

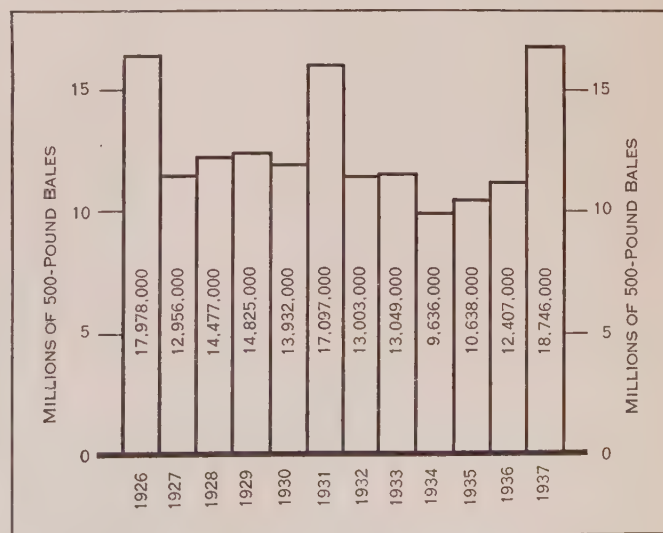
and particularly in Great Britain, is to decline.

The growth of competition by Eastern countries has been causing increasing anxiety to European, and particularly British, manufacturers, and this movement is likely to increase on account of the factors mentioned above. It was, of course, inevitable that cotton manufacturing in India, Japan, and China should increase as those countries became more westernized, but the growth has been more rapid than trade leaders anticipated. Production in Great Britain is now estimated to be at around 4,000 million square yards a year, and about half of this quantity is exported, the other 2,000 million square yards being consumed in the home market. Prior to the World War, British exports alone totalled to nearly 7,000 million square yards, which represented 75% of the total British output.

According to the latest figures of production, the Indian mills are now producing at the rate of 4,000 million square yards a year, which is equal to Britain's output. As a point of interest, however, India still imports a large quantity of cloth, the 1936 total from the United Kingdom being 416.4 million square yards and 355.7 million square yards for the 12 months of 1937. For the 12 months ended March 31, 1937, imports from Japan totalled 472.6 million square yards. The total exports of cotton piece-goods to all countries, from the United Kingdom for the 12 months ended Dec. 31, 1937, totalled 1,921,918,000 square yards, as compared with 1,916,604,000 square yards in 1936. British yarn exports amounted to 159,098,500 lb. as compared with 150,924,800 lb. in 1936.

One of the most important developments in textile manufacture, especially in Great Britain, has been in the production of piece-goods made from spun staple fibre. The raw material is being produced by the principal rayon companies in increasing quantities, and production of this particular type of cloth is expanding rapidly. It is not possible to obtain figures as to yardage, but a large number of Lancashire spinning mills are utilizing this relatively new method of producing rayon yarn. Briefly, it is the rayon filament cut into staple lengths, spun on a spinning frame, and then manufactured into cloth. The method improves the "feel" and texture of the finished rayon fabric.

With regard to textile machinery, no revolutionary improvements have been made during the past 12 months, but at the same time machinery makers have been concentrating their attention on the production of mechanisms and apparatus for the more economic production of yarn and cloth. In the spinning section, the



COTTON CROP in the United States. The figure for 1937 is the Department of Agriculture's final estimate (December). Highest previous record was in 1926



use of high-speed cages for the elimination of dust and dirt is of great interest. This is important from the operatives' point of view, as it should lead to a reduction in illness caused by respiratory disease.

Perhaps the most important step taken in spinning mills during the past few years has been the introduction of the high draft system of spinning. This system has been adopted particularly in the United States and in Great Britain, but it is now being taken up by other cotton spinning and manufacturing countries. Another interesting feature has been the increasing use of variable speed motors for driving ring frames. It has been adopted satisfactorily, not only in its application to ring frames, but also to winding machines and other types of machinery in a cotton mill where variable speed is necessary.

Important progress has also been made in the development of machines and processes which lie between the spinning spindle and the loom. Improved types of winding and warping machines have been produced, which, while obtaining the increased speed and production demanded, ensure that the wound packages and the completed warp maintain a high degree of quality.

There has also been a definite development in the use of the cotton system as against the horizontal mill system for the production of rayon warps. The first-named system has been very largely adopted in the United States, and costs of production have been materially reduced. Increased speeds in these earlier processes have brought about the introduction of improved sizing machines, both for cotton and rayon, and they have enabled greater production to be secured when slashing. Seven-cylinder sizing machines are now obtainable.

Warp stretch control apparatus has been applied to sizing machines, with the result that modern warps, even though they are produced at a very much higher rate of speed than the old type warps, are infinitely better in regard to the elasticity of the yarn and warp in general.

With regard to cotton looms, probably the most important development has been in general construction. This applies also to the manufacture of automatic looms, and practically every type of cloth, from low-grade qualities to intricate fancy weaves, can now be produced by automatic machinery.

**World Cotton Machinery: Spindles.**—The following are official statistics of spindles in the chief producing countries compiled by the International Federation of Master Cotton Spinners' and Manufacturers' Associations, as of July 31, 1937.

	Spindles
United States . . . . .	26,664,000
Great Britain . . . . .	38,753,000
Japan . . . . .	11,889,000
Germany . . . . .	10,236,000
*Russia . . . . .	10,050,000
India . . . . .	9,876,000
France . . . . .	9,783,000
†Italy . . . . .	5,483,000
*China . . . . .	5,071,000
Czechoslovakia . . . . .	3,445,000
Brazil . . . . .	2,714,000
Belgium . . . . .	2,004,000
Spain . . . . .	2,070,000

\*Estimated. No returns received.

†Figures for July 31, 1935.

The number of world spindles amounts to 149,618,000. Of this total, 88,733,000 are in Europe, 26,827,000 in Asia, and 31,674,000 in the United States and South American countries. The total in other countries is 2,384,000. The spindles in course of erection on July 31, 1937, totalled 122,000 in Europe, 177,000 in Asia; U.S. figures are not available.

The following table shows the number of active spindles in

the leading American States and the total for the whole United States in 1937:

State	Number	% of Total
North Carolina . . . . .	5,636,708	23.4
South Carolina . . . . .	5,488,761	22.8
Georgia . . . . .	3,050,805	12.7
Massachusetts . . . . .	3,019,222	12.5
Alabama . . . . .	1,746,006	7.2
Rhode Island . . . . .	815,023	3.4
Maine . . . . .	636,380	2.6
Virginia . . . . .	613,624	2.6
Connecticut . . . . .	606,435	2.5
Tennessee . . . . .	576,727	2.4
New Hampshire . . . . .	554,448	2.3
New York . . . . .	291,566	1.2
Texas . . . . .	211,988	.9
Mississippi . . . . .	171,829	.7
All others . . . . .	660,415	2.7
United States . . . . .	24,979,937	

**Looms.**—According to the International Cotton Loom Census taken by the International Federation of Master Cotton Spinners' and Manufacturers' Associations, the total number of world looms on Jan. 1, 1937 (latest figures available), amounted to 3,070,395. This number includes both ordinary and automatic looms. The following table shows the number of looms in place, based on actual returns, in the principal countries:

Country	Ordinary	Automatic	Total (including automatic attachments)
*United States . . . . .	181,123	392,329	573,452
Great Britain . . . . .	483,984	15,224	504,773
Japan . . . . .	292,564	40,000	332,564
†Russia . . . . .	216,000	25,000	250,000
India . . . . .	197,363	4,185	201,548
Germany . . . . .	169,800	18,200	200,500
France . . . . .	152,800	37,700	193,900¶
†Italy . . . . .	91,500	33,500	146,500
Czechoslovakia . . . . .	100,890	1,930	104,180

\*Approximate figures compiled by Cotton Textile Institute of New York.

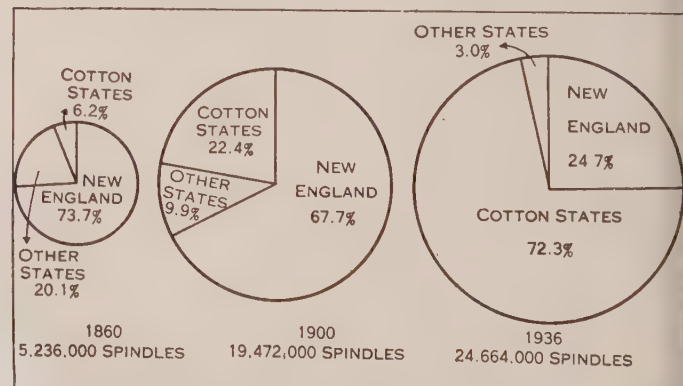
†No returns. Figures estimated from trade sources.

‡No returns. Jan. 1934 total given.

|| International Federation estimates.

¶Excludes 8,600 linen looms usually working on cotton or cotton and rayon cloths.

The world total of all looms, including ordinary, automatic and those with automatic attachments on Jan. 1, 1937, and Jan. 1, 1934 (the previous census), is as follows: Europe 1,776,580; America 766,065; Asia 515,469, as of Jan. 1, 1934; Europe 1,742,202; America 724,727; Asia 599,800, as of Jan. 1, 1937. The world's total of ordinary looms: 2,411,227 as of Jan. 1, 1934 and 2,344,183 as of Jan. 1, 1937; of automatic looms: 596,596, Jan.



COTTON MANUFACTURING in the United States: total number of active spindles in 1860, 1900, and 1936 (indicated by area of circles) and distribution among the States in each year



1, 1934, and 662,167, Jan. 1, 1937; of looms with automatic attachments: 52,046, Jan. 1, 1934 and 64,045, Jan. 1, 1937.

(See also LINEN AND FLAX; RAYON; TEXTILE INDUSTRY; WOOL; etc.) (F. W. TA.)

**Coubertin, Pierre de Fredi de,** <sup>BARON (1863-1937),</sup> French author and organizer of the modern Olympic Games, was born in Paris, Jan. 1, 1863. Convinced in 1883 of the necessity of sports instruction in French schools, he began work which resulted in the inauguration of interscholastic contests in 1889. This accomplishment was soon followed by a desire to stimulate international competition. From 1894 until his retirement in 1925, he saw active service as president of the International Olympic Committee, which sponsored the quadrennial revival of the ancient contests starting in 1896. Throughout his life, he was a determined opponent of all commercialization of athletics. He was author of *L'Education en Angleterre, Universités transatlantiques, Souvenirs d'Amérique et de Grèce, L'Evolution française sous la IIIe République*, and *Memoires Olympiques*. He died at Geneva, Sept. 2, 1937.

**Countries of the World, Areas and Populations of the:**  
see AREAS AND POPULATIONS OF THE COUNTRIES OF THE WORLD.

**Cox, Sir Percy Zachariah** <sup>(1864-1937),</sup> British administrator, who as acting minister to Iran during 1918-20 negotiated the Anglo-Persian Treaty. Transferred to Mesopotamia as High Commissioner in 1920, he became known during his three-year administration as the "king maker" for the part which he played in establishing the new Arab state of Iraq and in placing Emir Feisal on the throne. Sir Percy's last official act was to represent India at the Geneva Conference of 1925 for framing a convention for control of the arms traffic. After his retirement he served as president of the Royal Geographical Society (1933-36). His death occurred at Melchbourne, Bedfordshire, on Feb. 20, 1937. An account of his career may be found in the *Encyclopædia Britannica*, vol. 6, p. 625.

**Craftsmanship.** In modern speech, the word "craftsmanship" means the skill of the workman in the use of his hands or tools as manifested in a thing made. There is therefore no craftsmanship in the product of automatic machines, though the machines themselves may be admirable examples of it. The development of machine manufacture during the past 150 years, called forth by the universal application of the principle of production for profit, *i.e.*, for the profit accruing to the owners of invested capital, has had the inevitable result of lessening the number of craftsmen required, and has also effected the destruction of many crafts, *i.e.*, trades depending on the supply of craftsmen.

This result is deplored by those who demand that things made for human use should be in their actual substance the product of human sensibility. It is deplored by those who know that men and women demand that things for daily and household use shall be as ornamental as they used to be in pre-industrial times, but that only starkly plain and functional things can properly be made by machines, and that the result of the mechanization of industry has been to flood the world with bad imitations of ornament. And it is deplored by those who see in our industrialism a destruction of human responsibility; for the worker in the factory is not responsible for what the machine makes (a machine makes only what it is designed to make), and is therefore, in fact, only a sentient part of the machinery.

On the other hand, the destruction of craftsmanship in the

making of the ordinary necessities of life has caused a special value to be placed upon the work of those few special individuals who still pursue the ancient pre-industrial methods of making. It was formerly true to say that "the artist is not a special kind of man, but every man is a special kind of artist." Now, this is true no longer. The artist is a very special kind of man, and the factory workman in his working hours has been reduced to a subhuman condition of intellectual irresponsibility.

Moreover, the works of these special artists, owing to their comparative costliness, are purchasable only by the comparatively rich. The consequence is that, for the most part, only those objects are made for which the richer class of buyer has a liking. Many of these objects, in spite of the artificial circumstances of their production and their consequent self-consciousness, display a quality of craftsmanship unsurpassed in pre-industrial times. In the "fine arts," craftsmanship has declined, because it is supposed to be a hindrance to the free expression of sensibility, but in the works of those called "artist-craftsmen" (to distinguish them from "factory hands"), craftsmanship has advanced and is venerated for its own sake.

The future of craftsmanship depends upon the future of machine industry, and the future of industrialism depends upon the future of banking. At this point the subject must be left for elucidation by financiers and economists. (E. G.)

**Crane, (Robert) Bruce** <sup>(1857-1937),</sup> American landscape artist, was especially noted for his paintings of autumn scenery. Born in New York City, Oct. 17, 1857, he died in Bronxville, N. Y., Oct. 30, 1937.

**Cricket.** Cricket rivalry between England and Australia has gone on for 60 years, but rarely has a series of matches between the countries proved of such absorbing interest as that in Australia which ended in March 1937, with Australia winners by three games to two. When the year dawned, England was two up. In each test success had fallen to the side which won the toss, and this also applied to the three remaining games. Never before has a side emerged victorious after losing the first two matches in a rubber of five. Results:

First test (Brisbane).	England won by 322 runs.
Second test (Sydney).	England won by an innings and 22 runs.
Third test (Melbourne).	Australia won by 365 runs.
Fourth test (Adelaide).	Australia won by 148 runs.
Fifth test (Melbourne).	Australia won by an innings and 200 runs.

On the whole the teams were very equal, but the phenomenal batting form of D. G. Bradman, the Australian captain, turned the scales. In both the third and fourth tests, Bradman hit a score of over 200, and he also reached three figures in the final game. Bradman, who had a batting average of 90, surpassed all other performances for Australia during the series, and when L. Fleetwood-Smith was fit to play he and W. J. O'Reilly formed a deadly pair of spin bowlers.

O'Reilly in the tests took 25 wickets. For England W. R. Hammond (Gloucestershire) and M. Leyland (Yorkshire) carried off chief batting honours, and the most effective bowling was done by W. Voce, of Nottinghamshire.

D. G. Bradman, scoring 810 runs, raised his aggregate against England to 3,406, which is the highest in the whole series by an Australian, and is surpassed only by J. B. Hobbs for England. In the first test, W. A. Oldfield (Australia) set up a new record for the number of batsmen dismissed by a wicket-keeper in the England-Australia matches. In all he has dismissed 90 batsmen.

The following record partnerships were established: Third



wicket (record for Australia), 249 by D. G. Bradman and S. J. McCabe in the fifth test at Melbourne. Sixth wicket (highest stand for any wicket in an England-Australia test in Australia), 346 by D. G. Bradman and J. H. Fingleton for Australia in the third test at Melbourne. In the third test, each side declared its first innings closed—an unprecedented happening in test cricket.

All attendance records for a test match were smashed when, at Melbourne on the third day of the third test, 87,798 persons were present. The returns for the whole match were 350,534 spectators and £29,687 in gate receipts.

Another test series followed, between England and New Zealand in England. England's victory by 130 runs at Manchester—in the only game of three that was finished—decided the rubber, but the issue might have gone the other way had New Zealand held catches at a critical point. The success of J. Hardstaff (Nottinghamshire) in making centuries both at Lord's and at The Oval was noteworthy. Although the New Zealanders won only 9 of 32 first-class matches, there was much promise in the batting of M. W. Wallace. The bowling of J. Cowie (medium-fast) was wonderfully steady and accurate, equal to that of any bowler in modern cricket. On their way home the New Zealanders played several matches in Australia.

Keen interest in the county championship was sustained until the last few days of August. Not for many years had the competition produced such a stern struggle for leading honours and such a wealth of entertaining cricket. Middlesex ran Yorkshire very close, and the lead changed hands four times, but Yorkshire finished champions. This fight for supremacy between north and south had an interesting sequel when a challenge match between the two counties was played in September. Middlesex was vanquished by an innings and 115 runs, but the game captured the imagination of the public, and charities benefited appreciably from the receipts. The final positions in the championship table were:

	P.	W.	L.	Won on 1st Inn.	Lost on 1st Inn.	No. Res.	Pts. Poss.	Pts. Obt.	Per- cent- age
Points awarded . . .	15	..	5	3	4	..	..	..	..
Yorkshire . . . . .	28	18	2	4	0	420	302	71.90	
Middlesex . . . . .	24	15	4	3	2	0	360	246	68.33
Derbyshire . . . . .	28	14	6	2	4	2	420	240	57.14
Gloucestershire . . .	30	15	10	2	3	0	450	244	54.22
Sussex . . . . .	32	13	7	8	4	0	480	247	51.45
Essex . . . . .	28	13	11	2	1	1	420	212	50.47
Glamorgan . . . . .	28	11	7	4	6	0	420	203	48.33
Surrey . . . . .	26	8	5	7	4	2	390	175	44.87
Lancashire . . . . .	32	9	5	12	6	0	480	213	44.37
Nottinghamshire . .	28	6	4	8	8	2	420	162	38.57
Warwickshire . . . .	24	6	8	6	4	0	360	132	36.66
Kent . . . . .	28	8	16	2	2	0	420	136	32.38
Somerset . . . . .	28	7	14	2	5	0	420	130	30.95
Hampshire . . . . .	28	7	16	4	1	0	420	128	30.47
Worcestershire . . .	30	8	17	0	5	0	450	135	30.00
Leicestershire . . .	26	1	11	3	11	0	390	63	16.15
Northamptonshire .	24	0	16	4	3	1	360	33	9.16

Of several new records made during the season, that of J. H. Parks (Sussex) was outstanding. Parks, by scoring 3,003 runs and taking 101 wickets, accomplished a feat which is unparalleled. For the first time, two players on the same day hit a score of 300; R. H. Moore (Hampshire) made 316 and E. Paynter (Lancashire) 322. The fastest piece of scoring ever seen in first-class cricket was that of Kent against Gloucestershire at Dover. Kent needed 218 runs to win, and scored them in 71 minutes.

The distinction of making two centuries in a match was enjoyed by four batsmen: C. S. Dempster (Leicestershire), L. E. G. Ames (Kent), D. R. Wilcox (Essex), and L. B. Fishlock (Surrey). "Hat-tricks" numbered ten, and W. Copson (Derbyshire), H. J. Butler (Nottinghamshire), and D. V. P. Wright (Kent) twice performed this feat, Copson in one match—against Warwickshire—taking four wickets in as many balls. A remarkable bowling

effort during the summer was that of J. C. Clay (Glamorgan), who in his 40th year, took 17 wickets in a match against Worcestershire.

W. R. Hammond (Gloucestershire), the one other batsman besides Parks to score 3,000 or more runs, headed the English batting averages, as he did in 1936, with an aggregate of 3,252 runs and an average of 65.04. Next in order came J. Hardstaff (Nottinghamshire), who averaged 57.72, and L. Hutton (Yorkshire) was third in the list with 2,888 runs, including 10 centuries.

The selectors of England teams (Sir Pelham Warner, Mr. R. A. Perrin, and Mr. T. A. Higson) searched in vain for new bowlers of the class required for representative cricket, and bowling honours were again distributed among the seasoned players. T. W. Goddard (Gloucestershire) was surpassed as regards average by H. Verity (Yorkshire), but he took 248 wickets, which was more than anyone else. Among several well-known cricketers who decided to retire at the end of the season were E. Hendren (Middlesex), who during a career dating back to 1907 scored 57,592 runs, A. Sandham (Surrey), and J. C. White (Somerset); and Sussex decided not to re-engage M. W. Tate.

To celebrate the 150th anniversary of the M.C.C., a week's high-class cricket was played at Lord's in May. South beat the north by six wickets, and the M.C.C. Australian XI overcame the rest of England by 69 runs.

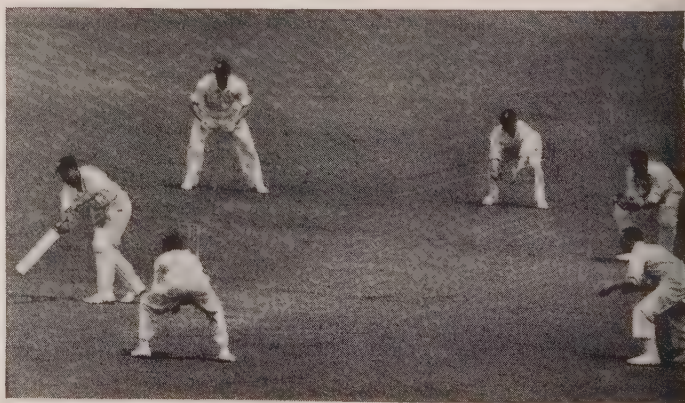
In May the M.C.C., by unanimous vote, sanctioned an alteration in Law 24 which deals with leg-before-wicket. An experimental rule had been in operation during 1935 and 1936. The change means that the striker may be out to a ball which, pitching on the off side of the striker's wicket, would have hit the wicket had it not been intercepted by part of the striker's person (except his hand) which part was between wicket and wicket at the moment of impact.

Before the season began the counties invited the M.C.C. to appoint a commission to investigate problems confronting first-class cricket. In December the commission (Mr. W. Findlay, Mr. R. C. N. Palaret, and Mr. R. H. Mallett) issued their report, which made certain recommendations concerning the finances of cricket, suggested a revision of the method of scoring county championship points, and of the conditions under which a player might qualify for a particular county, and recommended a stricter adherence by county teams to the hours of play.

Lancashire second eleven became champions of the minor counties competition by beating Surrey second eleven in the challenge match. There was strong competition for honours from Hertfordshire as well. A feature of the season was a performance of N. Harding, a medium-fast bowler, who took 18 wickets for Kent against Wiltshire.

Winners of the several competitions played overseas were as follows:

Sheffield Shield (Australia)—Victoria.



ENGLAND VS. NEW ZEALAND at Lords, June 28, 1937. Illustrating how Gooldee set up his slips to trap J. L. Keed, New Zealand







(See also CHICAGO; FEDERAL BUREAU OF INVESTIGATION; JUVENILE DELINQUENCY; LIE DETECTOR; POLICE; RACKETEERING; STATE LEGISLATION: *Crime Control*; UNITED STATES: *Crime*.) (G. W. KI.)

**Great Britain.**—Whereas the number of persons under 16 years of age found guilty of indictable offences is increasing rapidly (see JUVENILE DELINQUENCY), the number of those in higher age-groups is beginning to show signs of decline. From the high level of 51,180 in 1932, for example, the number fell in 1935, the latest year for which complete statistics are available, to 47,424.

These statistics show that the incidence of crime is nearly eight times greater among males than females: 370 out of every 100,000 men and boys in the population were found guilty of indictable offences, the corresponding figure for women and girls being only 47, though the number of females charged has shown a steady increase since 1930.

Of every 1,000 men and boys found guilty of indictable offences, 10 were under the age of 16, 7 between 16 and 21, 4–5 between 21 and 30, and 1–2 over 30.

In about 74% of the cases of indictable offences, the crime was larceny, and in more than half of these the persons charged were under 21. Next in order of frequency comes fraud and false pretences with 10%, "breaking and entering" (7%), miscellaneous offences, including attempted suicide (4%), and sexual offences and offences against the person with 3% each.

Of 168,485 cases of theft known to the police (involving 30,347 cases of "breaking and entering" and 138,138 cases of larceny), the value of the property stolen was under £5 in 79.5% of the cases, between £5 and £100 in 19.3%, and over £100 in 1.2%. A recent analysis of property stolen in the Metropolitan Police District showed that in 30% of the cases the value was £1 or less. The most common form of larceny is theft from shops and stalls, followed by thefts of pedal cycles, thefts from unattended vehicles, "larceny by a servant," and thefts from automatic machines and metres. Taken as a whole, cases of larceny increased from 41,045 in 1929 to 51,477 in 1935.

Under the heading "breaking and entering" (which includes burglary, house-breaking, etc.), the most frequent offence is shop-breaking—which accounts for more than half of the total number of cases. Nearly three-quarters of the persons found guilty of "breaking and entering" were under 21. The total number of persons found guilty more than doubled between 1929 and 1935.

Frauds and false pretences were slightly up on 1929, but showed a decline from the level reached in 1932. Of the 4,958 offenders, 2,147 were guilty of "obtaining by false pretences"; 839 were persons under 21.

Sexual offences were slightly higher than in 1929, and 20% of the offenders were under 17. Roughly, half of the total number of cases related to indecent assault.

Cases of violence against the person (including murder, attempts and threats to murder, infanticide, manslaughter, wounding, and other serious offences of violence) show a marked increase since 1929. Of 1,397 offenders, 1,139 were found guilty of "wounding," and 947 of these cases of "wounding" were dealt with summarily. One hundred and one murders (exclusive of infanticides) were reported to the police; in 50 of these cases the murderer—or suspect—committed suicide; in 49 cases arrests of 47 persons were made, and in the remaining 2 cases the murderer escaped. Of the arrested persons, 9 were acquitted, 20 were found to be insane, 1 died while on remand, and 17 were sentenced to death; of these, 8 were executed, the sentences of 7 were commuted to penal servitude, 1 was respited and sent to the Broadmoor lunatic asylum, and in the remaining case the conviction was quashed on appeal.

Finally, the number of suicides and attempted suicides, after steadily climbing from 3,715 in 1921 to 5,657 in 1932, has at last begun to show signs of a check, the number for 1935 being 5,223, of which 32.5% were women. A similar state of affairs is shown in regard to the number of attempted suicides known to the police.

With regard to non-indictable offences, 57% of these were accounted for by infringement of the traffic laws, of which 78.5% related to motor vehicles and 16.7% to pedal cycles. Cases of obstruction with cars and motor-cycles amounted to 50,103 out of a total of 432,816, while traffic offences as a whole increased by 30% between 1934 and 1935.

The figures for non-indictable assaults show a decline, but offences by prostitutes are increasing, and more than doubled between the years 1931 and 1935.

In 1936, the number of persons found guilty of drunkenness amounted to 44,525, as compared with 42,159 in 1935 and the astonishingly low level of 30,146 in 1932. From 1920 to 1932 there was a steady decline in offences of this kind, but there has been a steady increase since. Offences against the Education Acts are steadily declining, the drop between 1931 and 1935 being from 7,318 to 4,768. Those against the Bankruptcy Acts increased from 105 in 1934 to 178 in 1935. (VI. BR.)

**Cripples, Care of:** see SOCIAL SERVICE.

**Cripps, Sir (Richard) Stafford** (1889– ), British politician and lawyer, is the youngest son of Lord Parmoor. Educated at Winchester and University college, London, he was called to the bar in 1913, becoming a King's counsel in 1927. He first entered parliament in 1931 as Labour member for East Bristol (which division he still represents), having been appointed solicitor-general in Ramsay MacDonald's government. Resigning with the other Labour ministers when the National government was formed in 1931, Sir Stafford became one of the leaders of the much diminished opposition. Controversy soon broke out between him and his colleagues, for he expounded more advanced views than those of other leaders, attacked the monarchy, and made himself the champion of the "united front" with the communist party and other dissident socialist bodies. These disputes continued until the autumn of 1937, when the annual conference of the Labour party, while emphatically rejecting co-operation with the communists, consented to changes in the party constitution, and elected Sir Stafford and his two associates, William Mellor and Professor Laski, to the executive, Sir Stafford announcing that he would relinquish his public campaign for the "united front." Sir Stafford has written much on socialism, and is the editor of two legal text-books.

**Croisset, Francis de** (1885–1937), Franco-Belgian dramatist born in Brussels, Jan. 28, 1885; died at Neuilly, Paris, Nov. 8, 1937. Croisset was his legally adopted pseudonym, his family name being Wiener, and his grandfather the Belgian engraver, Jacques Wiener. After graduating in law at Brussels university, Croisset pursued a literary career in Paris. His plays, which earned him a high reputation include *Chérubin* (1901); *Le Paon* (1904); *Le Bonheur* and *Mesdames* (1905); *Paris-New York* (1907); *Arsène Lupin* (1905, with M. Leblanc); and a number of plays written in collaboration with Robert de Flers, such as *Le Retour* and *Les Vignes du Seigneur*. Croisset's non-dramatic work includes *La Féerie Cinghalaise*; *Nos Marionnettes*; *La Vie Parisienne au Théâtre*; *Nous avons fait un Beau Voyage*. Croisset was a liaison officer between the French and British armies during the war. He was decorated with the Legion of Honour and the Croix de Guerre.



# CROP CONTROL—CROQUET AND ROQUE

**Crop Control.** More intensified activity toward governmental control of agricultural production marked 1937. This movement, seemingly of little formidable significance before 1929, has grown rapidly ever since, not only in the three deficit, totalitarian States, Germany, Italy and Japan, but also in the other two principal countries deficient in food and raw products, the United Kingdom and France.

**United States.**—The Government's "Ever Normal Granary" project was given to Congress in 1937 to evolve laws, probably early in 1938, to establish quotas for production and carryover in order that surpluses and shortages might be avoided and a balance established between lean and fat years. Loans were granted growers on corn and cotton, soil conservation practices were encouraged and retirement of submarginal lands and resettlement carried on.

**Germany.**—Probably outstanding in the extension of Government authority in agriculture in 1937 was Germany where the kind of feed for livestock was fixed by decree, farmers were compelled to surrender all wheat and rye in excess of household and seed requirements, and to encourage early delivery the Government scaled prices so that farmers were penalized for holding back grain. The Government also established annual quotas for all grains to be produced by each farm, with a minimum of bread grains, to prevent farmers from planting only feed grains which are not required to be surrendered. The Reich's efforts toward a self-sufficiency goal also decreed that no land must be idle. All farming is supervised, certain crops rigidly restricted and others encouraged by price fixing, subsidies, loans and tariffs.

**United Kingdom.**—The Government subsidy for home-grown beef and veal, amounting to 5s. per cwt. (9s.4d. dressed weight) was changed slightly to afford a premium on extra prime cattle and a lower subsidy on fairly good grades. No substantial changes, however, were made in foreign import quotas, tariffs, including duty-free preferences for Empire countries, subsidies and marketing organizations which have fostered agricultural production in the United Kingdom during the last seven years.

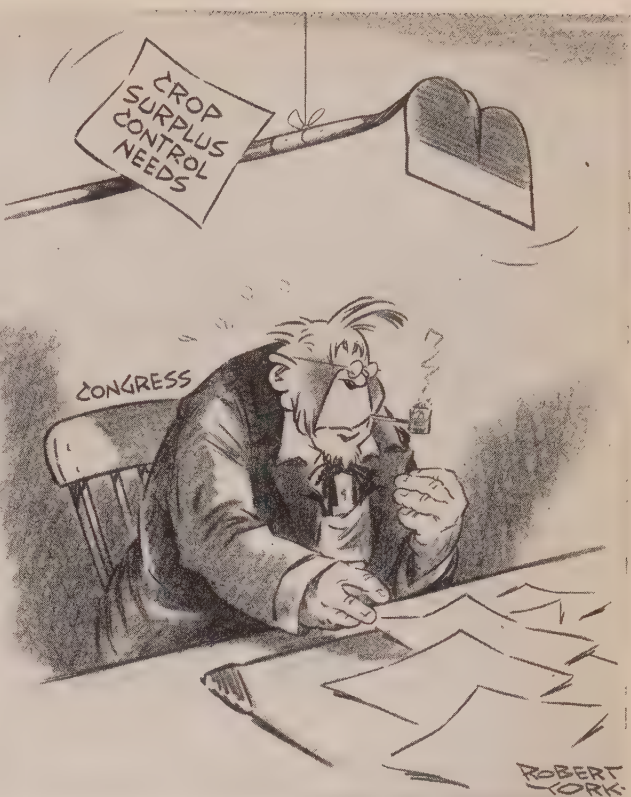
**France.**—Farmers were granted credit relief in 1937 by a decree deferring payment of certain debts two years. The tendency now is more toward social than economic measures, since Government intervention in previous years established import quotas, tariffs, subsidies, market control and price fixing for the protection of French agriculture on which about 48% of the population is dependent, in contrast with the United Kingdom where only about 7% is engaged in agriculture.

**Italy.**—No marked changes were made in 1937 in policies by which the Italian Government seeks self-sufficiency in agriculture, by tariffs, price fixing and subsidies. It is interesting to note that Italian per capita wheat consumption declined from 7.8bu. in 1925 to 6.5 in 1937 and in that period Italian consumers paid a premium estimated at \$2,800,000,000 on wheat.

**Japan.**—Government encouragement has increased Japanese rice production to 85% of consumer needs but no material changes developed in 1937 affecting the problems of heavy farm debt and taxation and tenancy, factors causing agricultural depression while industrial development was growing rapidly.

For regulation of other crops (see SUGAR, and COFFEE); (see also AGRICULTURE). (S. O. R.)

**Crop Insurance.** Recommendations that crop insurance in the United States be applied, at the outset, to wheat only were made by a special committee appointed by President Roosevelt. The proposed plan calls for insurance of a maximum of 75% of a harvest by a wheat grower, such insurance to be paid the grower in actual wheat. Thus, if the average acre yield of a farm were 16 bushels, insurance would guaran-



"THE MAN WITH THE HOE." A modern version of the menacing sword of Damocles, depicted by York in the *Louisville Times*, as Congress senses organized agriculture's urge for farm legislation

tee that the grower received 75% of that yield, or 12 bushels. If the grower raised less than 12 bushels, the insurance would make up the difference. In this way the plan avoids the hazard of attempting to assure the grower an income, or any price for his grain, a procedure that is considered impractical. Premiums paid by growers would be based on crop-loss experiences on each farm, and generally would run under 10%, although in the Dust Bowl area they would run higher. The government would accept wheat for premiums and would buy wheat with cash premiums, the grain so acquired to be stored and held from year to year to provide stabilization between lean and fat years. Insurance by farmers would be entirely optional, unlike certain European systems where it is compulsory. (S. O. R.)

**Croquet and Roque.** English croquet players defeated a visiting Australian team in a series of five "test" matches for the MacRobertson trophy, the gift of Sir MacPherson Robertson, K.B.E. The open championship was won by C. F. Coleman, who defeated Miss D. D. Steel, former croquet champion in England.

Miss Steel won the ladies' championship, the ladies' gold medal and the president's cup. Other principal matches were won as follows:

Men's championship, J. A. McMordie. Men's doubles, Lord Tollemache and Sir Gerald Burke. Men's gold medal, J. A. McMordie. Irish championship, J. C. Windsor. Ladies' field cup, Mrs. B. C. Apps. Mixed doubles, M. B. Reckitt and Mrs. B. C. Apps. Inter-county championship, won by Middlesex.

Croquet in the U.S. maintains apparently only a local interest. Records of the Amateur Athletic Union of the U.S. disclose no championship matches. One of the most active croquet organizations is the Circle Croquet and Roque club of New York city. Members of this club are said to have played on the club grounds, regardless of weather, almost every day for the last thirty years



**Crozier, Frank Percy** (1879–1937), C.B., C.M.G., D.S.O., British soldier; born Jan. 9, 1879; died at Walton-on-Thames, Surrey, Aug. 31, 1937. He was educated at Wellington, and, after having had, for reasons of health, to abandon the prospect of a military career, took the opportunity of the South African war to enlist in Thorneycroft's mounted infantry. During the course of that war he obtained a commission in the Manchester regiment. He continued to serve in Africa until 1905, but bad health led him to resign his commission in 1909. In the World War he went to France as major with the 9th Royal Irish Rifles, of which he took command in Jan. 1916. In Nov. 1916, he was promoted brigadier-general commanding the 119th Brigade, and from March to April 1919 commanded the 40th Division. From the autumn 1919 until March 1920 he was inspector-general and military adviser to the Lithuanian army. His D.S.O. was won in 1917, and his C.M.G. and C.B. followed in 1918 and 1919. In 1921, following his pacifist activities, which, from the disciplinary point of view, were questionable, he resigned. General Crozier married, 1904, Ethel Colb (*d.* 1921), and second, 1921, Grace Catherine Croker Roberts. There were two daughters by the former marriage. General Crozier's publications include: *A Brass Hat in No Man's Land* (1930); *Impressions and Recollections* (1930); *Five Years' Hard* (1932); *Angels on Horseback* (1932); and *The Men I Killed*, which aroused considerable controversial discussion.

**Crude Oil:** see PETROLEUM.

**Cruisers:** see LONDON NAVAL CONFERENCES; NAVIES OF THE WORLD; REARMAMENT.

**Cuba,** a republic occupying the largest of the West Indian islands; language, Spanish; capital, Havana; president, Federico Laredo Bru; area, 41,634 sq.mi. without small neighbouring islands. Population (census, 1931) 3,962,344; (estimate, 1936) 4,108,650, including about 68% whites. The chief cities (1930) were: Havana, 542,522; Santiago, 103,525; Cienfuegos, 87,669. The United States has a leased naval base at Guantánamo.

**History.**—The year 1937 in Cuba was featured by more open military domination of government, increased sentiment against foreign business, and an extensive "Three-Year Plan" for the nationalization of industry. Since 1933 the dominant political figure had been the "Cuban Warwick," Colonel Fulgencio Batista, chief of the Constitutional Army of Cuba. In the closing days of 1936, refusal of President Mariano Miguel Gómez to approve a Batista-inspired law which placed rural education under control of the army brought about President Gómez's impeachment and removal from office (Dec. 23, 1936). Vice-president Federico Laredo Bru then assumed the presidency. The first months of 1937 saw the elimination of Gómez partisans from official positions, with important changes in the presidency of the House of Representatives and in the diplomatic representation at Washington. While these changes were being effected, Cuban progress was almost at a standstill; but in the rest of the year, significant accomplishments were recorded, including plans for the amortization of the Machado public works debt, a favourable commercial treaty with Great Britain, and, most significant of all, the beginning of a "Three-Year Plan" for economic and social reconstruction, announced in July by Colonel Batista. In presenting this program Batista cast aside all pretence of military non-intervention in civil affairs.

Continued efforts were made by the Government to improve the status of labour and industry at the expense of foreign enterprise. Previous law had required that a minimum of 50% of the payroll in each establishment go to Cuban nationals. In May, this was raised to 60% by legislative enactment. Foreign con-

cerns protested bitterly against this law, which made it difficult to obtain adequate high technical personnel, as well as against a Labour Department policy of refusing labour permits to foreigners if Cubans were available for the work, and the further requirement that, for each foreign technician employed, one Cuban apprentice be hired.

The signing of a commercial treaty with Great Britain (Feb. 19), which granted that country's nationals special exemptions from labour laws and most-favoured nation status (except against the United States), precipitated sharp criticisms from United States business firms. By this treaty, Cuba gained most-favoured nation status in British markets (except against the British Empire). Opponents of the Government likewise took the occasion to criticize the treaty as an invasion of the legislative prerogative.

A further significant labour development was the deportation of Haitian, Jamaican, and other West Indian labourers in February and March. This caused protests from Jamaica, while return of Haitians to Haiti had serious effects there (*see* HAITI; DOMINICAN REPUBLIC).

Of great importance to Cuban national credit was the decision of the Supreme Court, June 2, in regard to \$60,000,000 in loans made by the Machado dictatorship and held chiefly in the United States. These had been repudiated in 1934, on the grounds of unconstitutionality, but the Supreme Court held them to be legal obligations. In December, a plan was tentatively agreed upon for new bonds to replace the old.

In July, Batista announced a vast social and economic reorganization program embodying most of the reforms advocated during the previous thirty years. With this Batista and the army emerged as the main power of Cuba. Previously, the army had obtained control of schools, built roads and hospitals, and intervened in congressional politics. The Three-Year Plan was a culmination of this activity. Embracing a twenty-point legislative program regimenting almost every phase of national life, it called for governmental reorganization and regulation of the sugar and tobacco industries; reform of banking and currency and of the tax system; increasingly nationalistic labour legislation; reforestation and water supply development; distribution of State lands; consumers' and marketing co-operatives; regulation of mining and oil production; judicial reform; creation of a merchant marine; a vast health and education program; and "nationalization" of property rights.

Announcement of the Batista plan caused great confusion and bewilderment. Congress was plunged into turmoil; business was so alarmed that within a few weeks over \$30,000,000 was shipped abroad. The general public, believing the plan too grandiose to be financed by the Government, was apathetic. Nevertheless, before the end of the year, considerable progress was made on several proposals. A banking mission went to the United States to study the banking and credit system of that country with a view to developing a Cuban-controlled banking system to replace the present foreign-controlled institutions. Co-ordination of the sugar industry was attempted by a law enacted in August, granting sugar-growers a five-year debt moratorium and providing for agricultural credits. In December an act was passed providing for distribution of State lands to tenant farmers, and some 33,000 acres were ordered parcelled out immediately.

When Congress re-convened, Nov. 1, after a six-weeks recess, President Laredo Bru recommended rapid action on banking reorganization, as well as suggesting further tightening of labour legislation to give greater protection to working classes.

Probably of greater concern to Congress than the details of the Three-Year Plan was the task of providing machinery for the elections of March 5, 1938, for renewal of half the seats in the House







Glasgow. The Liverpool club in 1937 won the Newall Cup in League competition with seven other English clubs, and also the Meggal Memorial Competition. The I'Anson Cup, which carries the championship, was won by J. E. Cowper, skip of the Manchester Caledonians, this being the eleventh time he has skipped the winning rink.

(S. O. R.)

**Currency:** see EXCHANGE RATES.

**Cycling.** Of outstanding importance were the two New York performances of the international six-day races, the first held in the spring and won by the team of Jean Aerts and Omer Debruycker of Belgium, the second staged in the early winter and captured by the German combination of Gustav Kilian and Heinx Vopel. As usual these sustained grinds, the sixty-second and sixty-third respectively, attracted the leading pedallers of the world with teams from England, France, Germany, Belgium and Italy entered. The thirty-first Tour de France race was won by Roger Lapébie of France, who covered the 2,775-mile circle around that country in 26 days, with 98 of Europe's blue ribbon cyclists participating. Italy's entrants were second, Germany's third, followed by Switzerland's, Spain's and Luxemburg's in that order. The Belgian riders, who were virtually sure of winning, withdrew from the race at Bordeaux because, they said, the spectators threw stones and pepper at them. In England, the team of Piet van Kempen of the Netherlands and Henri Buysse of Belgium won London's six-day race. The Isle of Man bicycle race was captured by J. Fancourt, who covered two laps of the difficult course in 3:28:43.6 for an average speed of nearly 22 miles an hour.

The national amateur cycling championships of the United States were held at Buffalo, New York. The three top honours were won by Charles Bergna, Furman Kugler and Miss Doris Kopsky, representing New Jersey, sweeping the junior events, the national senior road title and the women's national championships. Angelo De Bacco of the Belleville B.C. (Belleville, N.J.) defeated a field of 120 cyclists to win the fifth annual Eastern U.S. road championship over a 50-mile course. The winning time was 2:12:08.4. The American dirt-track title was won by Buster Logan of Newark, N.J., who subsequently also captured the national quarter-mile championship for amateurs. Benny Kaufman of New York was the victor in the national speedway motorcycle racing championship of the American Motorcycle Association. Joe Petrali of Milwaukee, Wis., made the highest speed ever attained by man on two wheels by driving his motorcycle at 136.18 miles an hour at Daytona Beach, Fla.

General interest in cycling became so great both in Europe and the United States that thousands of persons purchased bicycles and made vacation trips on them. Railroad companies ran special trains out of the crowded cities to rural sections where passengers were able to rent a bicycle and ride for the day. (T. J. D.)

**Cyprus,** one of the largest islands in the Mediterranean, 60 mi. from Syria and 40 mi. from Asia Minor; British Crown colony, area, 3,584 sq.mi.; population (1931 census) 347,959. The year has been one of increased prosperity and there has been a steady decline in death-rate and infant mortality combined with an increase in the birth-rate. Thanks to favourable weather conditions and continued satisfactory world prices, trade figures have been appreciably higher. During the nine months ending Sept. 30, 1937, imports amounted to £1,601,201, and exports to £1,483,301, being respectively £577,386 and £429,468 more than during the corresponding period of 1936. Conspicuous among the exports were mining products, particularly asbestos, copper ore, and pyrites. The mining industries of the island are assuming great importance, and the development of its mineral resources is destined

to play a great part in its economic future. Public finances were good. Revenue for the year was approximately £100,000 above the estimates, and there will be an estimated surplus of £116,000, which will bring the reserve to £456,000.

**Czechoslovakia,** a republic of central Europe and member of the League of Nations. Bounded W. by Germany, N. by Poland, E. by Rumania, S. by Hungary and Austria. President, Dr. E. Beneš. Flag, blue, white and red.

**Area and Population.**—The area is 54,244 sq.mi. Population: 1936, 15,187,000; 1934, 14,729,536, of whom 9,688,770 were Czechoslovaks (about 7,300,000 Czechs and 2,300,000 Slovaks), 3,231,688 Germans, 691,923 Magyars, 549,169 Ruthenes, Russians and Ukrainians, 186,642 Jews (by nationality), 81,737 Poles and 49,636 others. There were 249,971 persons not Czechoslovak citizens. The Czechs inhabit chiefly the centres of Bohemia and Moravia; the Slovaks, north and central Slovakia; the Germans the west and north of Bohemia, and north Moravia, forming about one-third of the populations of Bohemia and Moravia; the Magyars, along the southern fringe of Slovakia; the Ruthenes, Carpathian-Ruthenia; the Poles, Silesia. In 1930 10,831,696 persons were Roman Catholics; 585,041 Greek and Armenian Catholics (nearly all Ruthenes); 1,129,758 Protestants; 145,598 Orthodox (Ruthenes); 356,830 Jews.

The chief towns with populations (1930) are: Praha (Prague), 848,823; Brno (Brünn), 264,925; Moravská Ostrava (Mährisch-Ostrau), 125,347; Bratislava (Pressburg, Pozsony), 123,892; Plzeň (Pilsen), 114,704; Košice (Kaschau, Kassa), 70,232; Olomouc (Olmütz), 66,440.

**History.**—The Government in 1937 was in the hands of a coalition, in which the Agrarians were the strongest party. The premier was Dr. M. Hodža, a Slovak. The Government resigned on July 16, owing to the refusal of the finance minister to sanction a Government subsidy on cereals, but was reconstructed in identical form, except for the finance minister. Internal politics as among the Czechs, and between the Czechs and Slovaks and Ruthenes (who were allowed to advance a short step along the road towards their promised autonomy), were quiet.

Interest centred on relations with the national minorities, and especially the Germans, two-thirds of whom belonged to the intransigent party of Herr Henlein, who enjoyed the open sympathy of the German Reich. On Feb. 20, the Government, which had invited the "activist" German parties (Agrarians, Social Democrats, and Clericals) to submit their wishes, announced agreement with those parties on five points:

(1) State capital expenditure and Government assistance should be distributed according to regional needs. Particular care should be taken to make use of German *entrepreneurs* and workmen in the German districts.

(2) Government subsidies for social welfare and health to be distributed, not only on the basis of population, but also of unemployment.

(3) Subject to the *sine qua non* of loyalty to the State, the Government would apply the principle of equitable proportion in appointment to State, etc., posts.

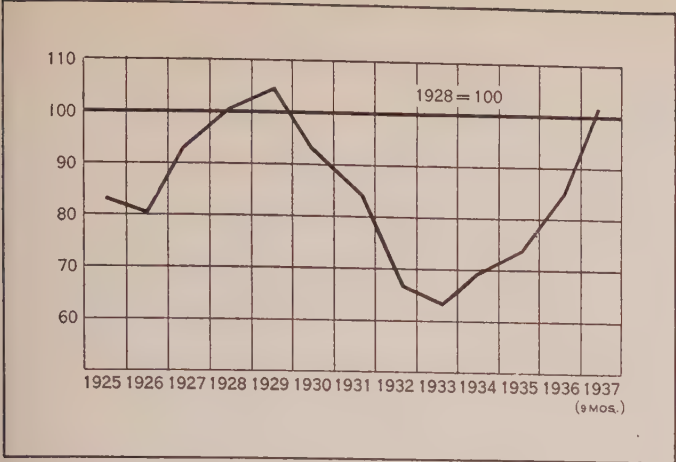
(4) Communications to communes, where an overwhelming proportion of the population speaks a minority language, to be accompanied by translations in that language.

(5) Educational concessions, in which the Poles and Magyars, as well as the Germans, should benefit.

Two demands were refused, as requiring amendment of the constitution; the creation of parliamentary commissions for minority questions, and the use of minority languages in parliament.

The "activists" were prepared to accept these concessions, and most of the Czechoslovak parties agreed to grant them. They





CZECHOSLOVAKIA: Industrial production index (1928=100) (*The Annalist*)

were attacked by the Czechoslovak nationalists, and still more by Herr Henlein's party, and by the Reich press, as insufficient in themselves and unaccompanied by any legislative guarantees. Herr Henlein pressed, among other things, for "Völkische" autonomy. Nevertheless, relations between the Government and the minorities certainly improved. There were two "incidents" which led to angry exchanges with Germany, and with the Henlein Party. On June 17 a German citizen of Czechoslovakia was alleged to have been maltreated in prison, and on October 17 some deputies of the Henlein Party were arrested and roughly handled. On the latter occasion feeling ran so high that the Government postponed holding the local elections, and prohibited public meetings throughout the country. On Oct. 8 two leading members of the Henlein Party were arrested on a criminal charge; one committed suicide in his cell.

The Government pinned its foreign policy to the Little Entente and to France. Much satisfaction was given by an assurance from M. Blum, in May, that France would stand by Czechoslovakia if attacked, and by M. Delbos' visit in December. Repeated assurances were given that the Czecho-Soviet Pact concealed no dark mysteries. A ludicrous incident occurred on Aug. 19, when Portugal broke off diplomatic relations owing to a squabble over a munitions contract.

Dr. Masaryk (*q.v.*), founder and first president of the state, died on Sept. 14, aged 87. Dr. Karel Kramář (*q.v.*), another great figure of earlier days, also died.

**Trade, Communications, and Finance.**—The monetary unit is the Czech crown, originally equal to 2.963 gold cents. This was devalued on Feb. 17, 1934, and again on Oct. 9, 1936, making a total devaluation of 30%. The finances are stable. Budget estimates for the last five years, in millions of crowns, follow:

	1933	1934	1935	1936	1937
Revenue . . . . .	8,634	7,632	7,985	8,034	8,456
Expenditure . . . .	8,633	7,631	7,983	8,032	8,454

In both national and party interests, the country is making a determined drive towards autarchy, this being the main cause of the persistent failure to reach a comprehensive trade agreement with Hungary. The Agrarians and Socialists have succeeded remarkably well in reconciling the conflict between producers' and consumers' interests in agriculture. Unemployment in industry has, however, been very heavy, particularly among industries working for export, which are largely situated in the German areas. The registered unemployed exceeded 860,000 in Feb. 1936 and still numbered over 500,000 in April 1937. The index of

employment (1929=100) ranged from 69.2 to 89.2 in 1936. In March 1937 it was 79.8. The index of industrial activities in 1936 was 91 (av. 1925-29=100).

**Defence.**—Military service is universal and compulsory. The average daily effectives (1937) were 10,221 officers and 178,448 other ranks (army and air force). A law providing for the pre- and post-military service of the whole population of both sexes, between the ages of 6 and 50, was passed on June 25, 1937. In 1936 a law had been enacted investing the Government with very wide powers for industrial mobilization for national defence, and establishing a very strict régime in the frontier districts. A decree was also issued providing for the formation of a force of frontier guards organized on military lines. (*See also* **LITTLE ENTENTE**; **MINORITIES**.)

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**Dahomey:** *see* **FRENCH WEST AFRICA AND THE SAHARA**.

**Dairying.** Milk provides one-fifth of the American farm income. The source of this wealth in 1937 was 24,902,000 cows and heifers more than two years old on U.S. farms and kept for milking purposes. This number was 89,000, or about 0.4%, less than the number of milk cows in 1936 and about 2,000,000 under the record high of 1934. Value per head of the milking herds in 1937 was \$54.45, or about \$4.06 higher than the preceding year. The number of U.S. dairy farms is approximately 605,000, but on 4,000,000 other farms there is an average of four milk cows each. Dairying is the largest farm industry in the United States. The 1937 production of milk was estimated by the U.S. Department of Agriculture at slightly more than 103,000,000,000 pounds. This is about the same as in 1936, but two per cent larger than 1934 or 1935 and 1,500,000,000lbs. less than the record high production of 1933. The average milk production per cow for 1937 was 4,358lbs., about one per cent over 1936 and the highest since 1931. For each 100lbs. of milk produced 41% was utilized as fluid milk, 44% went to the manufacture of butter, 6% to the manufacture of cheese, 4% was canned as evaporated or condensed milk or cream and 3% was used in the manufacture of ice cream, and a still smaller quantity was used in the manufacture of various milk products such as malted milk. Milk production in 1937 was low the first four months owing to scarcity and high cost of feed, but abundant pastures and crops later provided favourable conditions for dairy operations. Tuberculosis in U.S. dairy herds, the U.S. Department of Agriculture announced in 1937, had reached practically a vanishing point, as virtually all the cattle in 46 States had been tested and the herds in the remaining two states would soon be accredited also. The scope of the undertaking to eradicate bovine tuberculosis may be better appreciated when it is known that New York was admitted to the list of accredited states only as recently as October 1937, and that it required 18 years of effort, the slaughter of 965,000 animals and a cost of \$57,000,000 to rid the state's herds of infection. Of the dairy animals reacting unfavourably to tuberculin tests in 46 states about one-fourth of the number were in New York.

Milk is now marketed by truck to a large extent in the U.S., and many cities, among them Buffalo, Cleveland, Minneapolis, St. Paul, Kansas City, Columbus, Louisville, Dayton, Richmond and Kansas City, receive all their milk by truck. Boston receives 90% of its milk by train and New York, 65%. Some cities, however, require by ordinance that milk be produced within 50mi. of the city, to insure freshness. The dairy industry is greatly concerned over the lack of standardized transportation charges, the





A DAIRY HERD at Warragul, Australia

University of Illinois having found, as one example, that 15 truck routes hauling milk about 12mi. had freight rates varying from 13 to 30 cents a hundredweight.

The 11th convention of the World's Dairy Congress was held in Berlin, Germany, August 22-28, 1937, at which time the International Dairy Exposition was also held. The Congress is sponsored by the International Dairy Federation and meets every three years. (See BUTTER: Milk.) (S. O. R.)

**Great Britain.**—During 1937 the general conditions affecting dairy farming in Britain were favourable. The summer pastures benefited by alternate periods of medium rainfall and sunshine and a satisfactory level of milk production was maintained. Good crops of hay and average crops of roots were obtained for winter use and, because of an all-round rise in the price of purchased feeding-stuffs, these home-grown products assumed greater importance than usual after the grazing season ended.

The number of dairy cattle declined very slightly during the year, most probably due to a small proportion of farmers reverting to beef production. The number of cattle under milking age showed a definite increase. There was also evidence of a slight decline in milk production in the latter half of the year, due in part to the decrease in the number of cows and in part to the higher cost of feeding-stuffs and labour. In some parts of the country, the difficulty of obtaining competent labour for dairy farms has become acute.

The schemes in operation for improving the hygienic standard of milk production and combating disease in dairy herds have made good progress. The number of herds producing "accredited" and "tuberculin tested" milk under the Milk (special designations) Order, 1936 have steadily increased. The revision of the attested herds scheme of the Ministry of Agriculture, for the recognition of herds free from tuberculosis, has created widespread interest, and the financial assistance now obtainable is encouraging many farmers to free their herds from this disease. Marked progress has been made in areas in Scotland and Wales where the herds are maintained entirely by home-bred stock. Towards the end of the year, serious outbreaks of foot-and-mouth disease

caused the closing of markets, restriction of movement of stock, and the slaughter of a number of herds. The official scheme of milk recording has been reconsidered with a view to improvement, in order that the percentage of recorded herds in the country might be increased.

In the Dominions, the wide differences in climatic conditions have naturally influenced dairy farming. In New Zealand, where a phenomenally wet summer was experienced, there was a plentiful supply of pasture even in the dry districts, but the making of good hay was difficult, and many hay crops were converted into silage. There was a slight decrease in the number of cows, but the average yield of butter fat per cow was increased, and there was also a slight increase in the total production of milk. In Australia, dairy farming is developed most fully in Queensland and Victoria. The number of cows is just over 3,000,000, or approximately 23% of the total stock of cattle. Milk production has increased with better weather conditions following periods of severe drought. South Africa experienced a season of extremes of rainfall and drought resulting in a record production of milk early in the year, followed by a rapid fall to a low level. A cattle improvement scheme has been introduced by the Department of Agriculture to assist farmers to keep better bulls. There is also definite evidence that a larger proportion of the milk produced is being required to meet an increased demand for liquid milk. In Canada, the conditions have approximated to the average in the eastern provinces (Ontario and Quebec) where dairy farming is mainly practised. The number of cows is about 4,000,000, equal to 43% of the total head of cattle. (See also BUTTER; CHEESE; MARKETING BOARDS; MILK.) (J. M.H.)

**Dakar:** see FRENCH WEST AFRICA AND THE SAHARA.

**Dalen, Gustaf** (1869-1937), Swedish inventor who received the Nobel prize in physics in 1912 and who was most widely known for his invention of the automatic valve lighting unmanned beacons at sunset, died at Stockholm, Dec. 9, 1937. An account of his life appears in the *Encyclopædia Britannica*, vol. 6, p. 987.



EXCAVATING CREWS worked two years removing 18,000,000 cubic yards of stone and earth from the United States' largest dam site, the Grand Coulee on the Columbia river.



**Dalziel, John Sanderson** (1839–1937), American wood engraver, was born in Edinburgh, Dec. 24, 1839. Before coming to the United States in 1869, he made engravings for Charles Dickens, *Punch* and the *London Courier*. The quality of his work was immediately recognized in the new world where his engravings of American birds became particularly prized.

He died in Denver, Aug. 18, 1937.

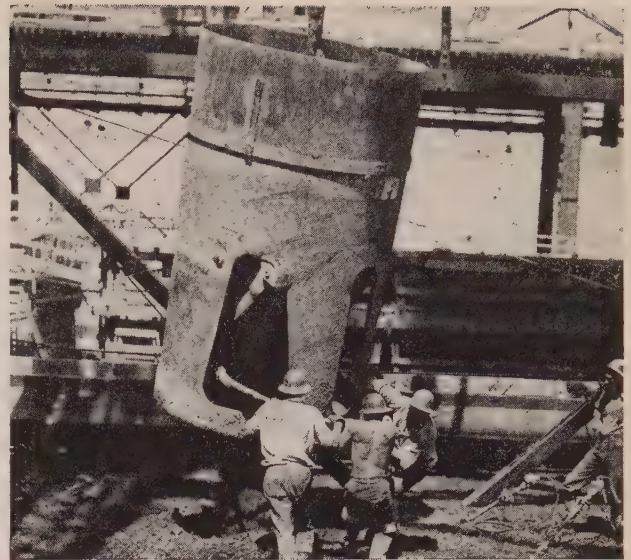
**Damrosch, Frank Heino** (1859–1937), American musician who founded the Institute of Musical Art in New York city; died in New York on Oct. 22, 1937. References to his musical work as well as that of his father and brother may be found in the *Encyclopædia Britannica*, vol. 7, p. 8.

**Dams.** Record-breaking projects in the fields of irrigation, power, flood control and navigation have brought dams to the fore in today's construction budgets.

In the United States, on the Columbia river, concrete pours into the forms at Grand Coulee at the rate of over 12,000 yd. per day. The low dam is nearing completion and the contract is signed for the remaining 300 ft. in height which will make it the largest concrete dam in the world. Two major difficulties harassed the contractor in the course of the year; one, a 200,000 cu. yd. landslide that threatened to engulf his excavation with a lava-like flow of mud; and, two, a cofferdam leak of 30,000 gals. per minute. By the German method of freezing, with some six miles of brine-carrying pipe, an arch dam of frozen mud was built to successfully halt the slide. Bentonite and a fill outside the cofferdam stopped the leak, narrowly averting disaster. Lower down on the river Bonneville has been completed and will be delivering power early in 1938.

Here are located the much-debated, yet untried fishways designed to enable the salmon to get past the dam to and from the spawning grounds and thus preserve the river's \$10,000,000 a year salmon industry.

Good progress has been made on Fort Peck on the Missouri river, the world's largest dam. Pending the driving of four concrete-lined diversion tunnels, 25 ft. in diameter and 6,000 ft. long, the work has proceeded in two sections, one on either side of the river. On June 24 the river was diverted through the completed tunnels, and work on the closure section commenced. On a tributary of the Missouri, the North Platte, Kingsley dam was begun. It will be second only to Fort Peck in volume. Another



EIGHT-TON BUCKETS dump concrete in five-foot layers to form the Grand Coulee Dam in Central Washington

record-breaker is the San Gabriel No. 1 dam, the highest of its type in the world, completed in July 1937.

A world's record for dams of this type was believed to have been set in May when 964,556 cu. yds. of fill were placed during the month. Below Boulder dam on the Colorado river, Parker dam, unique in its unprecedented depth of excavation to bed-rock, saw that difficult task accomplished this year. Of the 320 ft. height of this dam 235 ft. will be beneath the stream-bed. Over 50% of the concrete is now in place.

The Shingmun dam at Hongkong, highest in the British Empire, was completed early in 1937. Earthquake danger, high cost of concrete material, and cheap labour dictated this unique hand-laid rockfill. It consists of an impermeable upstream panel mounted on a heavy thrust block backed up by the rockfill with a thin wedge of sand in between to equalize the pressure as the rockfill settles.

Four dams in Algeria are notable for their impermeable upstream faces and extensive drainage systems. Here, too, the rockfill was laid by hand or machine rather than dumped loose, in an effort to build according to a rational design worked out from experimental and theoretical investigation.

Data on other important dams will be found in the accompanying table. (See also MISSISSIPPI RIVER SYSTEM.) (W. P. C.)

Chief Dams of the World

Name of Dam	River	Place	Type	Maximum Height, Feet	Crest Length, Feet	Volume (cu. yds.)	Purpose*	Built By	Progress*
Bakhadda . . . . .	Verde . . . . .	Algeria . . . . .	Rockfill . . . . .	146	722	420,000	I	U. S. Reclamation Bureau . . . . .	C
Bartlett . . . . .	Verde . . . . .	Algeria . . . . .	Concrete, multiple arch** . . . . .	270	750	157,725	I	U. S. Reclamation Bureau . . . . .	C
Bolivar . . . . .	Sandy Creek . . . . .	Ohio, U. S. . . . .	Earthfill . . . . .	80	6,300	2,033,000	F	Muskingum Conservation District . . . . .	C
Bonneville . . . . .	Columbia . . . . .	Oreg.-Wash., U. S. . . . .	Concrete, straight gravity . . . . .	170	1,250	806,500	P, N	U. S. Army Engineers . . . . .	C
Bu-Hanifa . . . . .	Algeria . . . . .	Algeria . . . . .	Rockfill . . . . .	180	1,510	1,000,000	I	U. S. Army Engineers . . . . .	C
Conchas . . . . .	South Canadian . . . . .	New Mexico, U. S. . . . .	Concrete, straight gravity . . . . .	220	1,250	647,380	F, W, P	U. S. Army Engineers . . . . .	C
Fort Peck . . . . .	Missouri . . . . .	Montana, U. S. . . . .	Earthfill, hydraulic . . . . .	242	9,000	100,000,000	F, P	U. S. Army Engineers . . . . .	U
Ghrib . . . . .	Algeria . . . . .	Algeria . . . . .	Rockfill . . . . .	233	886	855,000	I	U. S. Reclamation Bureau . . . . .	U
Grand Coulee . . . . .	Columbia . . . . .	Washington, U. S. . . . .	Concrete, straight gravity . . . . .	550	4,200	11,250,000	I, F, P	U. S. Reclamation Bureau . . . . .	C
Hamilton . . . . .	Colorado . . . . .	Texas, U. S. . . . .	Concrete, multiple arch . . . . .	158	11,500	189,000	P	Lower Colorado River Authority . . . . .	U
Haweswater . . . . .	Haweswater . . . . .	Westmoreland, Eng. . . . .	Concrete, hollow buttressed . . . . .	120	1,550	120,000	W	Manchester Corporation . . . . .	U
Kingsley . . . . .	North Platte . . . . .	Nebraska, U. S. . . . .	Earthfill, hydraulic . . . . .	162	11,000	26,000,000	I, P	Central Nebr. Public Power and Irrigation District . . . . .	U
Marshall Ford . . . . .	Colorado . . . . .	Texas, U. S. . . . .	Concrete, straight gravity . . . . .	265	2,500	1,758,700	F, P	U. S. Reclamation Bureau . . . . .	U
Mohawk . . . . .	Walhunding . . . . .	Ohio, U. S. . . . .	Earthfill . . . . .	115	2,330	2,203,200	F	Muskingum Conservation District . . . . .	C
Parker . . . . .	Colorado . . . . .	Ariz.-Calif., U. S. . . . .	Concrete, constant-radius arch . . . . .	320	800	260,000	W, P	U. S. Reclamation Bureau . . . . .	U
San Gabriel No. 1 . . . . .	San Gabriel . . . . .	California, U. S. . . . .	Earth and rockfill . . . . .	381	1,520	10,809,000	F	Los Angeles County Flood Control District . . . . .	C
Shingmun . . . . .	Shing Mun . . . . .	Hongkong, China . . . . .	Rockfill . . . . .	285	695	641,000	W	City of Hongkong . . . . .	C
Taylor . . . . .	Taylor . . . . .	Colorado, U. S. . . . .	Earthfill, rolled . . . . .	168	600	1,000,000	F	U. S. Reclamation Bureau . . . . .	C
Tygart River . . . . .	Tygart . . . . .	W. Virginia, U. S. . . . .	Concrete, straight gravity . . . . .	232	1,850	1,100,000	I	U. S. Army Engineers . . . . .	C
Vaalbank . . . . .	Vaal . . . . .	South Africa . . . . .	Concrete, gravity . . . . .	160	1,700	220,000	W, I	Transvaal Irrigation Department . . . . .	U

\*I=Irrigation, F=Flood control, P=Power, N=Navigation, W=Water supply, C=Completed in 1937, U=Under construction in 1937, \*\*Highest in world.





1. NORRIS DAM on the Clinch river, twenty-five miles northwest of Knoxville, Tennessee



3. BONNEVILLE DAM on the Columbia river, forty-two miles east of Portland, Oregon



2. BOULDER DAM on the Colorado river near the Arizona-Nevada state line



4. Artist's conception of the GRAND COULEE DAM on the Columbia river, when completed



**Dancing.** In the ballroom, "swing" music has exercised a considerable amount of influence, and in England the Imperial Society of Teachers of Dancing has attempted to arrange a routine of steps to fit it. In the United States, where swing originated, dance movements with a decided hop effect have shown a tendency to become popular, especially among the college boys and younger folk. Such movements have many curious names, but collectively they are known as "shag."

In the autumn a curious dance known as the "Big Apple" and its "refinement" the "Suzy-Q" arrived in New York. It came from Columbia, South Carolina, where a small abandoned synagogue had been converted into a night-club called "The Big Apple." It is danced in a circle by a number of couples and a caller, who nominates the steps to be performed. These are mostly of a shag, Charleston, or "truckin'" nature, and are generally a little eccentric, particularly when a solitary couple is called to the centre to "shine," that is, to show off and execute the strangest steps they can.

In England the quick or old time waltz has been very much in evidence in the West End, but the rumba, which is still in favour in the United States and in France, has made very little headway. In the English popular ballrooms, where dancing is taken more seriously, there has been a great revival of interest in competitions in the four standard dances—waltz, slow fox trot, quick step, and tango—and the British championships (professional winners—Adela Roscoe and Cyril Farmer; amateur—Renée Sissons and John Wells) were again broadcast. Competitions on a large scale have been held in Germany at which representatives of many nations competed. The English amateur champions won the more important of these. In February in Copenhagen, a team of English amateurs just managed to defeat a team of Danish amateurs—Herr Max Wendt of Hamburg being the sole adjudicator.

In Paris, the Conga was revived and met with a certain amount of popularity.

In England, formation dancing has attracted some attention, and numerous teams have been formed throughout the country. Denmark and Germany are also interested.

In the autumn, the university extension committee of the University of London organized a series of six lectures dealing with the history, meaning, and influence of the dance, which were delivered in the senate house.

During 1937, the Royal Academy of Dancing, which had been given a charter early in 1936, sent examiners to South Africa and also to Australia and New Zealand. About 7,000 candidates took the academy's children's examinations during the year.

The English Folk Dance and Song Society celebrated its silver jubilee year with its usual dance festival at the Royal Albert hall in January, and in June was responsible for a massed folk dance display by nearly 1,400 dancers, at the Festival of Youth at Wembley. (See also **BALLET**.) (P. J. S. R.)

**Danish Literature:** see **SCANDINAVIAN LITERATURE**.

**Danube, Control of.** This was vested after the War in two bodies: the European Commission, controlling the mouth, and composed, since the War, of representatives of France, Great Britain, Italy, and Rumania; and the International Commission, established in 1921 with seat in Bratislava (since 1927, in Vienna). This was intended to control the Danube from the limits of the European Commission's jurisdiction up to the highest navigable point, Ulm. All the riparian states, with France, Britain, and Italy, were represented. On Nov. 14, 1936, Germany resigned from this commission and refused to recognize its competence in German waters, alleging



**DANCERS SHOUT, "Praise Allah."** A figure in the Big Apple, the dance discovered in a Columbia, S. C., Negro dance hall by University of South Carolina students

that it constituted an "inequality" against her, and also that her efforts to be reinstated on the European Commission, whence she had been dislodged under the Treaty of Versailles, had been unsuccessful. (C. A. M.)

**Danzig,** an important port on the Vistula river near the Baltic sea, was taken from Germany after the World War and created a free city—sovereign in some respects, controlled by Poland in others, and supervised by a high commissioner ap-



**"SWING HIGH, SWING LOW,"** a movement in the noisy, romping Big Apple, a dance that has spread over the United States and to Europe



pointed by the League of Nations. Its area is 754 sq.mi. and its population 407,000, of whom 291,000 live in Danzig itself, the remainder in the surrounding rural districts. As Danzig had been under the Teutonic Knights from 1308 to 1454, under Poland from 1454 to 1793, and a part of Prussia from 1793 to 1919, it was furiously coveted by both Germany and Poland even after its establishment as a free city. Centuries-long emotional hatreds caused bitter German-Polish friction and constant appeals to the League of Nations for fifteen years after its separation from Germany.

With Hitler's coming into power in Germany in 1933 the German-Polish friction decreased, but the conflict between the Nazis and the anti-Nazis in Danzig increased. Hitler's German-Polish ten-year treaty of friendship of Jan. 26, 1934, agreeing that neither country would use force against the other, and his German-Polish Minority Agreement of Nov. 5, 1937, guaranteeing equal treatment of minorities, greatly improved the relations between the two countries. Poland's new port of Gdynia, founded soon after the World War, connected by railway with Warsaw, and favoured with Polish capital and railway rates, grew with such mushroom rapidity that its volume of trade exceeded that of Danzig by 1933; in 1936 4,920 ships cleared at Gdynia and only 3,195 at Danzig. Poland's power of diverting trade to the rival port of Gdynia threatened economic disaster to the old Hanseatic city. The bitterness felt by the Danzigers because of this was somewhat lessened by the Danzig-Polish Harbour Agreement of Aug. 5, 1933, by which the two ports were to share equally in Poland's trade.

Hitler regards the Germans in Danzig as part of the German folk, and the Nazis there are organized under the aggressive Nazi district leader, Arnold Forster, as part of the German Nazi party. In 1933 the Danzig Nazis, aided from Germany, began to use the strong-arm methods of their party brethren in the Reich, employing Brown Shirts and the policy of co-ordination (*Gleichschaltung*) to get control of the Danzig Government. The high commissioner tried to protect the rights of liberals, Catholics, Jews, and Poles, but he fought a losing fight because the League of Nations was growing progressively weaker. Trade unions and opposition newspapers were suppressed, and opposition leaders were placed under "protective arrest." The Communist party was forbidden in May 1934, and the Social Democrats in Oct. 1936. Arthur Greiser, a radical Nazi who became president of the Danzig senate in Nov. 1933, was called to account by the League of Nations in Jan. 1936, but in the following June he came to Geneva and made a defiant speech demanding the end of League control. His dissolution of the Catholic Centre Party in Oct. 1937, finally gave the free city completely into the hands of the Nazis. See article DANZIG in *Encyclopaedia Britannica*; and Ian F. D. Morrow, *The Peace Settlement in the German-Polish Borderlands* (Oxford Univ. Press, 1936). (See NAZIS; LEAGUE OF NATIONS.) (S. B. F.)

**Dardanelles:** see TURKEY.

**Dartmouth College.** Significant developments during the year 1937 included curriculum changes and the solution of certain problems in the social life of the college.

During the year a new course in social science was inaugurated as a means of stimulating and interesting first-year students in modern social, economic, and political institutions. It is required of all freshmen. The purpose is to emphasize the interrelations between the subjects of history, economics, sociology and political science. To achieve this objective, the class is divided in small sections taught by a staff selected from each of the social science

departments. In the sophomore year men who do not expect to major in the social sciences are required to take a second year of integrated study of contemporary American institutions. Here again departmental boundaries are not recognized.

Following a two-year study of the social life of the college a committee submitted an exhaustive report to the president and made important recommendations, several of which have already been adopted by the trustees. A college adviser to fraternities has been appointed to assist the 22 fraternities in a program of revitalization.

The opening of Thayer hall in September provided the college with a solution of the eating problem for members of the three upper classes, accommodating about 700 in its cafeteria, colonial dining room, and rathskeller. The freshman class continue to eat in Commons also owned and operated by the college.

The enrolment has been limited to about 2,400 during recent years, there being 2,442 during the 1937-38 session.

(E. M. Hs.)

## Daughters of the American Revolution.

The national society, Daughters of the American Revolution, was formed to perpetuate the memory and spirit of the men and women who achieved American independence, by the acquisition and protection of historical spots and erection of monuments, by historical research in relation to the Revolution and publication of this data, by preservation of relics, documents, and records of individual services of Revolutionary soldiers and patriots, and by promotion of celebrations of patriotic anniversaries. Likewise, to carry out the injunction of Washington in his farewell address to the American people, "to promote, as an object of primary importance; institutions for the general diffusion of knowledge"; to cherish, maintain, and extend the institutions of American freedom, to foster true patriotism, and love of country, and to aid in securing for mankind all the blessings of liberty. It has a broad and varied program of education for all foreign and native born, to bring knowledge, understanding of fundamental principles upon which this nation was founded.

Since its organization in 1890 with 18 women, 325,000 have enrolled in 2,500 chapters in every State and in foreign countries. Work—historical, patriotic, educational—is carried on through 25 national committees, all working toward one goal, to preserve the nation's birthright and her ancient landmarks, to foster the cause of freedom, to make real the American dream of liberty, opportunity, justice and humanity, for all. (F. H. BE.)

**Davidsohn, Robert** (1853-1937), German historian; born at Danzig, April 26, 1853, of Jewish parents; died in Florence, where he lived much of his life, Sept. 18, 1937. Dr. Davidsohn's publications include: *Von Nordcap bis Tunis* (1884); *Philipp II, August von Frankreich und Ingeborg* (1888); *History of Florence* (his chief work, in 7 vols., of which the first appeared in 1896); and many contributions to German and Italian reviews.

**Davis, Norman Hezekiah** (1878- ), American banker and diplomat, born in Tennessee; he became prominent in the commercial and financial life of Cuba in the early years of the century; in 1917 was appointed foreign loans' adviser to the Treasury; became in 1919 a member of the Armistice Commission and of the Supreme Economic Council; and was under-secretary of State from 1920 to 1921. Frequently a member of U.S. delegations to Geneva and to disarmament conferences, in March 1933 he was accorded the rank of am-



Mean Expectation of Life at Birth and Death-rates of Stationary Population

Country	Period	Mean Expectation of Life in Years		Death-rate	Period	Mean Expectation of Life in Years		Death-rate
		Males	Females			Males	Females	
Austria . . . . .	1866-75	30.38	33.10	31.5	1930-33	54.47	58.53	17.7
Bulgaria . . . . .	1899-1902	39.99	40.33	24.9	1925-28	45.92	46.64	21.6
Denmark . . . . .	1835-44	40.87	43.31	23.8	1931-35	62.0	63.8	15.9
England and Wales . . . . .	1838-54	39.91	41.85	24.5	1936	60.13	64.43	16.1
Scotland . . . . .	1861-70	40.32	43.85	24.0	1930-32	56.0	59.5	17.3
Northern Ireland . . . . .	1890-92	46.3	45.7	21.7	1925-27	55.42	56.11	17.9
Irish Free State . . . . .	1890-92	49.1	49.2	20.4	1925-27	57.37	57.93	17.3
Finland . . . . .	1881-90	41.39	44.18	23.4	1921-30	50.68	55.14	18.9
France . . . . .	1840-59	39.30	40.99	25.0	1928-33	54.32	59.04	17.7
Germany . . . . .	1871-80	35.58	38.45	27.0	1932-34	59.86	62.81	16.3
Holland . . . . .	1840-51	34.94	37.76	27.5	1921-30	61.9	63.5	16.0
Italy . . . . .	1876-87	35.1	35.4	28.4	1930-32	53.76	56.00	18.2
Norway . . . . .	1821-30	45.0	48.0	21.5	1921-30	60.98	63.84	16.0
Sweden . . . . .	1755-75	33.9	36.6	28.4	1926-30	61.19	63.33	16.1
Switzerland . . . . .	1876-80	40.53	43.19	23.9	1929-32	59.25	63.05	16.4
U.S.S.R. . . . .	1896-97	29.43	31.69	32.8	1926-27	40.23	45.61	23.3
United States (Whites) . . . . .	1900-02	48.23	51.08	20.2	1935	60.72	64.72	16.0
Australia . . . . .	1881-90	47.20	50.84	20.4	1932-34	63.48	67.14	15.3
New Zealand . . . . .	1891-95	55.29	58.09	17.6	1931	65.04	67.88	15.1
India . . . . .	1881	23.67	25.58	40.7	1931	26.91	26.56	37.4
Japan . . . . .	1898-1903	43.97	44.85	22.5	1926-30	44.82	46.54	21.9

bassador, and a month later took part in the World Economic Conference in London, at which he maintained that economic appeasement must precede any world-wide political appeasement. In Dec. 1935 he headed the American delegation to the Five-Power Naval Conference in London, which resulted, on March 25, 1936, in the signature of a six years' naval treaty by Britain, the United States, and France—Japan (who had previously withdrawn) and Italy refraining. In April 1937 Mr. Davis represented the U.S. at the International Sugar Conference in London; in May he was awarded the Woodrow Wilson Foundation medal for his work in the advancement of better international relations; and in November was again in Europe leading his country's delegation to the Far Eastern Conference in Brussels.

**Davis Cup:** see LAWN TENNIS.

**Death Duties:** see TAXATION.

**Death Statistics.** Adequate death statistics are available for about one-third of the population of the earth. They are rather more complete than birth statistics for times of peace, but are usually defective for war years. In western and northern Europe the yearly number of deaths increased from 2,421,000 in 1841-45 to 3,114,000 in 1891-95. It decreased slightly in the following years, but averaged about 3,470,000 in 1915-19. From 1920 to 1936 it varied between 2,317,000 (1934) and 2,598,000 (1922) without showing any marked tendency. For the white population of the British Empire it increased from 795,000 in 1921-26 to 825,000 in 1927-36.

The simplest method of relating deaths to population is to compute the yearly death-rate, *i.e.*, the rate of deaths per 1,000 inhabitants. The death-rate in western and northern Europe dropped from 23 in 1841-85 to 17 in 1911-14. In 1923-36 it oscillated around 13. It averaged nearly 12 in 1921-36 both for the white population of the British Empire and for the entire population of the United States.

The crude death-rate shows the proportion by which a population decreases through deaths, but it is not an adequate measure of mortality, since it is calculated without regard to the age composition of the population. The best method of eliminating the disturbing influence of the age composition is to compute a life table.

According to the life tables computed for the 1890's, the mean expectation of life of the newly born was 58 years in New Zealand, 53 years in Australia, 52 years in Sweden and Norway, 50 years

in Denmark, 48 years in Holland, 47 years in Belgium and Switzerland, 46 years in England and Scotland, 44 years in Finland, 42 years in Germany, 37 years in Austria, and 31 years in Russia (including Siberia). In no country did the mean expectation of life reach 60 years before the twentieth century. It now exceeds 60 years in Denmark, Norway, Sweden, England, Germany, Holland, Switzerland, the United States, Australia, New Zealand. In 1933 it was 61 years in England and 68 years in New Zealand. The table above shows for various countries the mean expectation of life of newly born boys and girls in the earliest period for which an adequate life table is available, and also in recent years. It shows furthermore the death-rates of the stationary population, *i.e.*, the correct death-rates, derived from the life tables.

In New Zealand, where actual mortality is lower than in any other country of the world, the correct death-rate is now 14.7. It is hard to conceive how it will ever be anywhere much lower, because a correct death-rate of 13 would presuppose a mean ex-

Average Annual Death-rates per 1,000, 1881-85 and 1933-36

Country (Present Territory)	1881-85	1933-36
United States . . . . .	15.2 (h)	11.0 (i)
Austria . . . . .	28.1	13.2
Belgium . . . . .	20.7	12.6
Bulgaria . . . . .	27.8 (a)	14.5
Czechoslovakia . . . . .	24.4 (b)	13.4
Denmark . . . . .	18.4	10.8
England and Wales . . . . .	19.4	12.0
Scotland . . . . .	19.6	13.2
Northern Ireland . . . . .	19.0 (c)	14.2
Irish Free State . . . . .	17.6 (c)	13.8
Finland . . . . .	22.2	12.6
France . . . . .	22.3	15.5
Germany . . . . .	25.6	11.4
Holland . . . . .	21.4	8.6
Hungary . . . . .	32.9 (d)	14.7
Italy . . . . .	27.3	13.6
Norway . . . . .	17.1	10.2
Poland . . . . .	30.1 (e)	14.2
Rumania . . . . .	26.5	20.1
Spain . . . . .	32.6	15.9 (f)
Sweden . . . . .	17.5	11.5
Switzerland . . . . .	21.3	11.6
Yugoslavia . . . . .	24.8 (d)	17.0 (g)
Australia . . . . .	15.7	9.3
New Zealand . . . . .	11.0	8.4

(a) Pre-war territory, 1891-95.

(b) 1901-05.

(c) 1881-90.

(d) Pre-war territory.

(e) 1880-81.

(f) 1933-35.

(g) 1933-34.

(h) 1900-20.

(i) 1930-34.



pectation of life of 77 years. On the other hand, the correct death-rate still exceeds 20 in many countries of Europe, and it exceeds 30 in vast areas of Africa and Asia. (R. R. K.)

**Debts, Government:** see NATIONAL DEBTS.

**Defence, National:** see NATIONAL GUARD.

**Degrelle, Léon** (1906– ), Belgian demagogue and agitator, was born of wealthy parents, and for a time practised as a lawyer. In 1935, he became notorious as the leader of a group of youths in the Catholic party, and formed within it the "Rex" (originally Christus Rex) movement, with the ostensible object of cleansing it from its impurities. This quickly became violently political, spreading charges against ministers, ex-ministers and others, particularly among the Catholics, Liberals, and Socialists; and at the general elections in 1936, 21 "Rexists" were returned, thanks mainly to propaganda and to funds suspected of being of Nazi origin since Degrelle entertained close relations with Germany. In October of that year, he visited Dr. Goebbels in Berlin and, while attempting on his return to organize a vast demonstration, was arrested, but released the following day.

In Jan. 1937, forbidden to broadcast in Belgium, he was allowed by the Italian Government to use the Turin transmitter, and seized the opportunity of attempting to spread Fascism at home. In March, in order to test popular feeling and confident of success, one of his followers resigned his seat and Degrelle stood for election; M. van Zeeland, the premier, opposed him; the result (v. Z., 275,840; D., 69,242) was a great set-back for the Rexists and a striking victory of democracy over Fascism.

In June, the coalition between the Rexists and the Flemish Nationalists, which had existed since the previous October, was broken at the instance of the latter; and in July, M. Degrelle was sentenced to four months' imprisonment (which were not served) for libelling M. Jaspar, the minister of transport. (See also BELGIUM.)

**Delaware**, one of the original States of the United States, popularly known as the "Diamond State"; area, 2,370 sq.mi.; population (U.S. census, 1930) 238,380, estimated July 1, 1937, 261,000. Capital, Dover, 4,800. The only city with larger population is Wilmington, 106,597. Of the State's population 123,146 were urban, or 51.7%; 205,694 white; 32,602 coloured, or 13.6%; 188,809 native born, white; 16,885 foreign born, white; total school attendance, 70,305.

**History.**—The Democrats having carried the State in Nov. 1936, Richard C. McMullen of Wilmington was inaugurated in Jan. 1937, the first Democratic governor since 1901. Other Democrats to take office were Edward W. Cooch as lieutenant-governor, Ernest C. Blackstone as State treasurer, and James W. Wise as State auditor. Charles L. Terry, Jr., was appointed secretary of State by Governor McMullen. During the session of the General Assembly beginning first Monday in January, 1937, the Republicans controlled the senate with William A. Simonton as president *pro tempore*, and the Democrats controlled the House of Representatives with John R. Fader as speaker. The Delaware Tercentenary Commission of 60 members was authorized by the General Assembly to prepare plans for celebration in 1938 of the 300th anniversary of the landing of the Swedes and the founding on the site of Wilmington of the first permanent settlement in the entire Delaware river valley.

The Delaware State Highway Commission was directed by the General Assembly to secure a plot for Fort Christina State park where the Swedes landed in 1638. On Dec. 7, 1937, the State of Delaware celebrated the 150th anniversary of its ratification of



R. C. McMULLEN, governor of Delaware

the U.S. Constitution, it being the first State in the Union to ratify that instrument.

The General Assembly authorized the erection in Dover of a State building to house the Corporation Division of the Department of State and Public Archives Commission, an armory in Milford, an addition to the Delaware State hospital at Farnhurst, and an addition to the Brandywine sanatorium at Marshallton. The total amount appropriated for expenses of the State Government, not including the State board of education or the State Highway Commission, for the biennium beginning July 1, 1937, was \$5,556,384.91. An unemployment compensation law was passed creating an unemployment compensation commission of

four members. A commission of five members was created to study the problem of teacher retirement pensions. An act was passed proposing an amendment to the Constitution for the reorganization of the State judiciary including the establishment of a Supreme Court consisting of three justices, and the consolidation of civil and criminal courts. James H. Hughes (Democrat) of Dover succeeded Daniel O. Hastings (Republican) of Wilmington as United States senator in January, 1937. John Biggs, Jr., of Wilmington, former chairman, Democratic State committee, was appointed judge for Third Federal Circuit Court by President Roosevelt. A new Federal post office, a court house, and a customs house building were dedicated in Wilmington. Delaware park (new race track near Stanton) was opened on June 28.

**Agriculture.**—The value of agricultural production in Delaware during the year 1937, was \$11,999,000, a decrease of \$1,125,000 from the year 1936. (G. H. R.)

**Delbos, Yvon** (1885– ), French journalist and statesman, member of the Radical-Socialist party, minister of education 1925, of justice 1936, and foreign minister since June 1936. In Jan. 1937, unveiling a war memorial at Châteauroux, M. Delbos, in reply to Hitler's Reichstag speech of the previous day, emphasized the need for Franco-German understanding and for both countries to find new markets so that industrial expansion might replace rearmament. After representing France at the Nine-Power Conference (*q.v.*) at Brussels on Nov. 3, M. Delbos expounded French foreign policy in a debate in the chamber on Nov. 18–19, emphasizing Anglo-French friendship and the necessity for its maintenance. Ten days later he visited London with M. Chautemps to receive a report from Mr. Chamberlain and Mr. Eden on the result of the Halifax-Hitler talks. Afterwards, he set out on a tour of the central and eastern European capitals, visiting Warsaw on Dec. 3, Bucharest on Dec. 8, Belgrade on Dec. 12, and Prague on Dec. 15, in each case discussing the European situation, and seeking to foster their friendly rela-



tions with France. On Dec. 10 it was announced that a plot to assassinate him at Prague had been discovered by the French police; the prospective assailant was arrested. At the end of the year M. Delbos was still in office, and he was reappointed foreign minister at the reconstruction of the Chautemps Government in the third week of Jan. 1938.

**Dementia Praecox or Schizophrenia:** see INSANITY; MEDICINE.

**Democracy.** Democracy signifies the government of the people. As the term is used today, in reference to the great States of the modern world (such as France, Great Britain, and the United States), it does not mean—as it did in antiquity—the direct government of the people itself through a popular primary assembly. It means an indirect form of popular government through a popularly elected parliament representative of the people. Modern democracy is thus connected with representative institutions; it is parliamentary democracy. This is not all. Beyond the parliament there stands an executive government which either proceeds from and is responsible to the parliament (in which case we generally speak of cabinet government), or proceeds from and is responsible to the people, in the same way and on the same footing as parliament (in which case we may speak, as in the United States, of presidential government). In either case, the executive government is a responsible government. We may therefore say that modern democracy involves the two factors of a congress or representative parliament and a responsible government. But there is a further and cardinal factor of modern democracy. If the people are to choose their representatives, there must be a number of parties (not a single party, but at least two, and possibly more than two), which submit their policies and the candidates who represent those policies to the verdict of a popular electorate. Democracy is not possible in a single-party State. This constitutes a line of division between democratic States and States both of the Fascist and the Communist type which adopt alike (however much they may otherwise differ) the principle and the practice of the single party. In the modern "conflict of ideologies," as it is often called, there is thus not only a conflict between Communism and Fascism, though that is often particularly emphasized; there is also a conflict, and a deep conflict, between States of both of these types and democratic States.

The fact that democratic States necessarily possess more than a single party, and that they necessarily involve debate between parties, and a national choice (or a nationally agreed compromise) between their different policies, leads to a further definition of the nature of democracy. Democracy is essentially a method of government by discussion—free discussion—in which different alternatives are freely submitted to the people and the people freely decide between them. In this method of government by discussion there are four stages and four organs. The first stage is the formulation of programs and the presentation of candidates who represent these programs; and the organ of this stage is party—or rather parties. The second stage is that of electoral discussions of programs and electoral choice among candidates; and the organ of this stage is the electorate. The third stage is that of discussion, by the members who have been chosen by the electorate from the different parties, of the lines of policy to be adopted by the legislature and to be expressed in legislation; and the organ of this stage is congress or parliament. The fourth and last stage is that of the final discussion and decision of policy (both foreign and domestic) by a responsible governing body which is united by a common party allegiance, which is confronted and criticized by an opposition united by a similar alle-

giance, and which keeps in close touch not only with the party (or union of parties) on which it is based, but also with the general body of the electorate and the parliament.

Two things may be said of this democratic system of government by discussion. The first is that its successful working depends on a proper harmony or balance between the four organs concerned in the system. Each must play its part: none must exaggerate its importance and its rights. The particular danger of democracy is an exaggeration of the importance and the rights of party. When party spirit and the party struggle are exaggerated and exacerbated, the result may be a party battle in which one party triumphs and proceeds to exterminate the rest. This means the institution of the single party State, and that means the death of democracy. The second thing which may be said of the democratic system of government is that it necessarily entails a regular and recognized opposition.

The whole process of discussion would fail, and cease, in the absence of an opposition.

In Great Britain and in democratic States, if a similar type in which the method of cabinet government is adopted, an essential and cardinal feature of the whole system is that a cabinet *in esse*, an actual cabinet, is confronted and criticized by a cabinet *in posse*, a potential cabinet (or, we may even say, an "anti-cabinet") which is constantly trying to evict and succeed the actual cabinet.

The evils which may be alleged against such a method of government are the evils of possible dissension; of possible delay in the decision of vital issues; of the possible failure of the government to secure the realization of its policy, and of its possible decline into a method of compromise with the opposition which emasculates its vigour and produces no definite or clear-cut results. On the other hand it may be said that debate is not necessarily dissension; that haste is not always speed; and that compromise is often the way of wisdom and of safety. In any case, as long as men have minds and opinions in their minds, they are necessarily bound to use their minds and to urge their opinions. In this sense, and from this point of view, democracy may be said to be based on the rock of human nature. (E. B.)

**Democratic Party.** With the re-election of President Roosevelt in November, 1936, the Democratic party retained control of the national administration, and increased its already large majorities in both House and Senate. In 1937, the governors of 39 States were Democrats, as were the mayors of most of the larger American cities. Postmaster-General James A. Farley remained as chairman of the Democratic National Committee. No meeting of the National Committee was held during the year. The objective of the national organization was to hold for the Democratic party, in the elections of 1938 and 1940, the commanding position which it had won in 1936 under the standard of Franklin D. Roosevelt. To this end, Chairman Farley travelled widely throughout the year, addressing meetings of party workers and conferring with State and local leaders. On March 4, President Roosevelt addressed a large Democratic victory dinner in Washington. Victory dinners were also held in many other cities, attended by party leaders and other prominent Democrats.

On several legislative issues, the Democrats in Congress were sharply divided. Many Democrats opposed the President's proposal to enlarge the membership of the Supreme Court, and many opposed other Administration measures—notably the wage-and-hour bill, the governmental reorganization bill, and the agricultural control bill.

As the year ended and the special session adjourned on December 21, it was evident that the majority party in Congress was still sharply divided on many issues.



On July 21, Senator Alben Barkley of Kentucky was elected Democratic leader of the Senate, to succeed the late Senator Joseph T. Robinson of Arkansas. In the House, William B. Bankhead of Alabama held office as speaker, with Representative Sam Rayburn of Texas as Democratic floor leader.

The scattered elections held in 1937 gave no evidence of any marked recession in the popular strength of the Democratic party. Though Bruce Barton (Republican) was elected to the House in a special election in New York city in November, to fill a vacancy in the 17th district caused by the death of the late Theodore A. Peyser, Lawrence Connery (Democrat) was elected by 3,000 majority in the seventh Massachusetts district to succeed his brother, the late William P. Connery. With some Republican support, Maurice J. Tobin (Democrat) was elected mayor of Boston in a contest in which party lines were broken down.

The New York city election in November, which resulted in the re-election of Mayor Fiorello La Guardia on a coalition ticket, was the most important election of the year. La Guardia won by a plurality of 453,374 over his Democratic opponent, Judge Jeremiah T. Mahoney. Thomas E. Dewey, who had achieved prominence by his drive against racketeers, was elected district attorney on the coalition ticket. Though Chairman Farley had backed Judge Mahoney, La Guardia in his social and political philosophy was sufficiently a New Dealer to cause the National Administration to view his victory as a partial triumph for New Deal ideas. Previously in the Democratic primary, Judge Mahoney had decisively defeated Senator Royal S. Copeland who had campaigned on an anti-New Deal platform.

The New York election was significant for three reasons: first, in dealing a smashing blow to Tammany Hall, of old the dominant political organization in the city; second, because of the surprising strength shown by the American Labor party, which polled about 480,000 votes in its second appearance on the New York city ballot; and, third, because in the defeat of Justice Mahoney, the regular Democratic organization lost its bid to recapture control of the city's political organization, held by La Guardia for the past four years.

Under the auspices of the Democratic National Committee, and as a means of raising money to help liquidate the Democratic party's deficit copies of the Philadelphia 1936 souvenir convention book, many of them autographed by the President, were sold to corporations and private individuals. Opponents of the Administration charged that this was a violation of the corrupt practices act, and that the sales were disguised contributions forced from corporations having business relations with the Government.

House Republican leader Snell demanded an investigation by the Department of Justice of the sale of the Democratic campaign books. In a reply to Mr. Snell, Attorney General Cummings declared that the sale of the books was not a violation of the existing statute.

In a special election held on October 18, Representative John E. Miller of Arkansas was elected to the Senate to take the place of the late Senator Joseph Taylor Robinson. On Aug. 19, 1937, Mrs. Dixie Bibb Graves, wife of Governor Graves of Alabama was appointed to the Senate to fill the vacancy caused by the resignation of Hugo Black, who had been appointed an associate Justice of the Supreme Court. At the close of the year, the Democrats held 76 seats in the Senate, and 330 in the House of Representatives. (See also ELECTIONS.) (O. McK.)

**Denmark,** kingdom of north central Europe, member of the League of Nations. Bounded N. and E. by Baltic waters, S. by Germany, and W. by the North sea. Capital, Copenhagen. Ruler, King Christian X (born 1870; succeeded 1912). National flag, a white St. George's cross on a red ground.

**Area, Population, and Cities.**—Area: 16,575 sq.mi.; population: (1935 census) 3,706,349:

Division	Area (sq.mi.)	Population (1935)
Copenhagen (city)	28	666,269
Baltic islands	5,136	1,367,845
Jutland peninsula	11,411	1,672,235

Administratively, the country is divided into 21 counties (*Amter*).

The established church is Lutheran, and though religious toleration is complete, less than 50,000 hold other or no beliefs.

Primary education is compulsory; in 1935, 4,556 schools had 495,000 pupils, Copenhagen university, over 5,000; secondary specialized schools are diverse and numerous.

Leading towns (1935 populations): Copenhagen, 843,168; Aarhus, 90,898; Odense, 76,116; Aalborg, 48,132; two others averaged 30,000.

**History.**—The king shares legislative power with a parliament (*Folketing*, 149; *Landsting*, 75). Suffrage is universal (over 25), representation proportional. The premier and 11 ministers form a state council, acting under the king's presidency.

Domestic events included celebration of the silver jubilee of the king's accession (May), the wedding of Princess Feodora, eldest daughter of the king's brother, Prince Harild, to Prince Christian of Schaumburg-Lippe (September), and, in September, the opening by the king of the Storstrøms bridge, the longest in Europe (over two miles, linking Masnedö and Falster islands, and shortening the Copenhagen-Berlin rail-journey by 50 minutes; built with British steel and in part by British labour). A bomb was ineffectively exploded outside the house of the defence minister (June).

The Army and Navy Bill (February) made modest proposals, with no increase in the air force. Hr. Stauning, the premier, commented (Stockholm; March) on a defensive alliance between the northern democracies, and visited London (April) relative to Anglo-Danish trade, Denmark having increased her British imports by 70% during 1931-36.

#### Trade, Communications, and Finance.

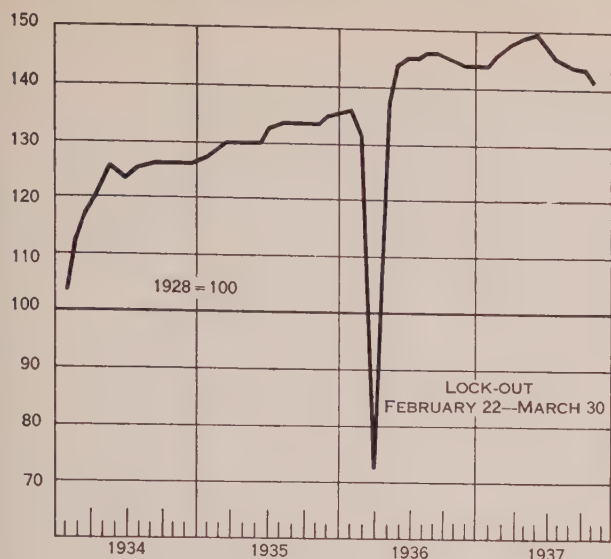
—The staple products are bacon, butter, and eggs, very largely exported to Great Britain. Imports for 1936: 1,484,084,000 kroner (£66,254,000); exports: 1,379,642,000 kroner (£61,591,000); both showing rises maintained in the first half of 1937.

Mercantile marine: 2,046 ships (1,187,200 tons). Mileage: railway (half state-owned), 3,200; road (main), 4,796. Telegraphs and telephones are well developed.



KING CHRISTIAN X of Denmark, who celebrated the twenty-fifth anniversary of his reign May 12, 1937





DENMARK: Industrial production. Monthly index, partly adjusted for seasonal variation (*The Annalist*)

The currency unit is the krone (at par, 18.16 kroner=£1= \$4.87). Notes in circulation by National Bank (1936): 398,558,000 kroner.

Budget estimate for 1938-39 (largest on record): revenue 477,000,000, expenditure 475,000,000 kroner.

**Defence Forces.**—National militia, 14,000 all ranks; 65 aeroplanes. Navy, 2 coast defence, 5 fishery patrol, 8 submarine, and smaller craft.

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**Dental Association, American:** see DENTISTRY.

**Dentistry.** Out of the mass of ideas and ideals, aims, and objects that have been fermenting in dentistry and dental education during the past twenty years, there came in 1937 the crystallization of a point of view which is of outstanding importance to health. Dentists and dental educators throughout the United States signified their almost universal acceptance of the basic principle, long preached by their leaders, that health in the mouth is intimately associated with health in the body and that the physical welfare of the patient as a whole is as much the concern of the dentist as it is the concern of the physician.

Three major events occurred during the year to bear witness of the widespread adoption of this point of view. First, all class A dental schools commenced the academic year in September on the basis of the so-called "two-four" plan of education. Second, two university dental schools offered for the first time, an entirely new type of course aimed at preparing dental graduates for the dental public health service. Third, the American Dental Association, the official professional body for the United States numbering 40,000 dentists, adopted for its principal theme at its annual convention last July, "Preventive Dentistry in the Interest of Health."

Of these three events, the third has a special significance because it represents the recognition by the large body of dental practitioners that dentistry is a true health service and that it should take a larger responsibility in the prevention of disease and the maintenance of health than it has hitherto.

While the first two events affect dental education primarily and thus appear to be largely of academic interest, in reality

they will profoundly influence the whole practice of dentistry and will improve the quality of service. The "two-four" plan, which went into effect in all class A dental schools this year, means that the minimum requirements for an education in dentistry are two years of study in a college of arts and sciences followed by four years in the dental school. Professions advance about in proportion to the advance in the quantity and quality of their requirements in education. Dentistry has always lagged behind medicine in this respect, and this has offered a serious obstacle to a close co-operation and a spirit of equality between the two professions.

Dentistry has experimented for more than a dozen years with a variety of educational plans, each of which has had merits and has aimed at raising the quality of preparation. With the almost universal adoption of the "two-four" plan, dentistry is at last on a plane of equality educationally with the minimum requirements prevailing in medicine. Thus a great barrier to professional co-operation has been removed.

The establishment of courses in training for the dental public health service by two leading universities came in response to a large demand. The need of strong dental divisions in State and city departments of public health was widely recognized. In some States and in some of the larger cities, such divisions have been organized, but when men who were competently trained to administer the work were sought, it was found that they are almost entirely lacking. The offering of these courses naturally followed. In one of these universities, the course is being offered under the joint auspices of the School of Public Health and the Dental School, a collaboration which signifies the progress made by dentistry in recent years.

Still further evidence of the acceptance of an enlarged responsibility is the fact that in all the clinical branches of dentistry, the importance of case study is being emphasized, not only in practice but as a teaching procedure in the schools. This means that attention is no longer directed just to the teeth and to the possibilities of repair of damage caused by dental disease. The larger aspects of the problem are considered, especially the causes of the condition and the relation which the general physical health of the patient bears to the particular dental problem. The dietary, metabolic, and endocrinological factors influencing the maintenance of health in the oral structures are studied, and the current medical knowledge in these fields is focused on the diagnosis and treatment of dental disease.

A review of the literature in internal medicine, pediatrics, endocrinology, chemistry, bacteriology, and physiology, shows that in investigation there is an obvious trend, although sporadic, among the clinicians of both medicine and dentistry to combine efforts in the study of disease.

This is especially true in studies on growth and development, infectious diseases, and nutrition. Of particular importance has been the establishment in many dental schools, along with the increased teaching of the principles of medicine, of clinical medical laboratories, which aid in the diagnosis of diseases of the dental structures.

Investigative work during the year was largely concentrated on the approach to dental problems from a basis of fundamental science. A brief review of typical studies in the United States and abroad will illustrate the point. May Mellanby of England concludes that the quality of tooth structure is of greatest importance, being dependent upon nutritional factors during formation, and that with our present knowledge of nutrition, it should be possible to reduce decay. Van Kreudenstein of Germany found in parathyroidectomized rats that calcification was largely a matter of raising the calcium content of the blood. Boyle, Bessey, and Wolbach at Harvard produced diffuse alveolar



atrophy in animals fed diets deficient in vitamin C (ascorbic acid), and these findings corresponded in essential characteristics with type II pyorrhoea found in human beings. Perla and Sandberg of New York city concluded that the adrenal gland is not essential in the production or utilization of vitamin C, but described interesting changes in the incisor teeth of adrenalectomized animals. Schröder of Germany found that inheritance plays a large part in cleft palate cases. The subject of inheritance was an important topic in Germany during the year, and several interesting studies were published.

In conclusion, it can be stated that a fundamental scientific approach to dental problems by competently trained men has begun, and real progress in the field of dentistry as a branch of medicine should result. Because practitioners, educators, and investigators gave widespread evidence in 1937 that dentistry's program is now based upon this precept, the year, 1937, marks a milestone in the progress and advancement of the profession.

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**Dernburg, Bernhard** (1865–1937), German banker and cabinet member who served as propaganda agent in the United States during the first years of the World War, was born in Darmstadt, July 17, 1865. After early establishing himself as secretary and director of the Deutsche Bank of Berlin, he was appointed Colonial Secretary in 1906. He was forced to resign in 1910, but remained a confidant of the Kaiser until chosen as German spokesman to the United States. Returning to Germany in 1915 following failure of his American efforts, he remained in the background until he became finance minister of the Republic following the war. After leaving this post, he continued prominent in German business until forced to retire in 1933 because of his Jewish blood. He died in Berlin, Oct. 15, 1937.

**Destroyers:** see LONDON NAVAL CONFERENCES; NAVIES OF THE WORLD; REARMAMENT.

**Detroit,** in Wayne county, in South-eastern Michigan, and on the Detroit river, the metropolis of the State, and the fourth city in the United States; area, 139.6 sq.mi.; population (U.S. census, 1930) 1,568,662; (estimate, 1937) 1,667,000. Foreign-born, 399,281, Polish and Canadian predominating. Assessed value, \$2,402,395,880; gross bonded debt, \$384,525,446; gross city appropriation, \$132,147,867; tax levy, \$59,280,482; tax rate for city purposes, \$24.68.

The economic, and to some extent, the governmental life of Detroit is largely determined by the production of automobiles. South-eastern Michigan builds 52% of the automobiles manufactured in the United States. It is estimated that one-half of the remainder are assembled from parts fabricated in Michigan. The decline in automotive production beginning in 1929 brought acute unemployment and heavy expenditures for relief to Detroit fully a year before the depression seriously affected the United States

as a whole. The first of the large cities to go into the depression, Detroit experienced an unusual economic recovery in 1937 due to the renewed buying of automobiles. This recovery was marked by a decided regression in the latter part of the year. During the year the industry produced slightly under 5,000,000 cars or 10% fewer than the peak year of 1929. In spite of technological advances, the industry reported a peak employment of 564,000 workers or 16% over the previous high. It is estimated that only 464,000 workers were employed in Dec. 1937 due to the marked recession in business and there was a further decline in employment in early 1938.

These wide variations in employment and unemployment had marked effect upon the relief load of Detroit and Wayne county and on the public finances of Detroit. In Dec. 1934, the relief rolls reached an all-time high of 55,562 families, or 13% of the 419,600 families enumerated by the school census. During 1934–35, 76,586 separate families were assisted. In 1937, due to Federal work relief and economic improvement, Detroit had the lowest relief load of any large city. In July 1937, only 14,301 families were on the rolls, or 3% of total families, and the total assisted during the year was 33,171.

Economic improvement was marked by the beginnings of the "sit-down" strike in the United States which for a few days reached epidemic proportions in the Detroit area. The Federal Labor Relations Act and Supreme Court affirmation of its legality brought to the surface a long threatening labour unrest. The first "sit-down" strike occurred in the plants of the General Motors Corporation in Flint in late Dec. 1936. Governor Frank Murphy insisted that the issue be settled without bloodshed regardless of technical legal considerations. After several efforts, and the intervention of the President of the United States, the strikers vacated the plants and elections were held under the supervision of the Federal Labor Relations Board which resulted in the recognition of the United Automobile Workers as the principal but not necessarily the sole bargaining agent with the company. The movement spread rapidly and during the spring and summer practically all automobile and parts manufacturers were subject to "sit-down" strikes and entered into union engagements with their employees. The Ford Motor Company was an exception. Strikes in the automotive plants were followed by "sit-down" strikes in many small industries and in the retail trades, frequently conducted by persons not employed by the companies affected. After some days of hesitation, the police intervened when there was disturbance of the peace and ejectments were made by the sheriff when a court order was obtained.

The movement for labour recognition led to an effort to install a Detroit government supported by labour. A former attorney-general of the State, Patrick O'Brien, Democrat, was endorsed by the United Automobile Workers for mayor and five prominent labour leaders were endorsed for the city council. Richard Reading, Republican, and city clerk for 12 years, ran as the "non-partisan" candidate. The issue was sharply drawn between the supporters of non-partisanship, which has been actually in effect in Detroit for twenty years, and labour, which proposed in the words of their candidate "to seize the reins of government." In the election, the "labour" candidate for mayor received 37% of the vote cast and all labour candidates for the Council were defeated.

Detroit was the largest American city to default on its public debt. This debt has been refunded but at a heavy cost in deferred interest. However, current tax collections are approaching normal, delinquent taxes are being liquidated, the tax budget much reduced, and there is distinct evidence of restored credit with normal city operations.

(L. D. U.)



**Deuterium:** see HEAVY HYDROGEN.

**De Valera, Eamon** (1882— ), Irish statesman. For details of his career up to 1927, see *Encyclopaedia Britannica*, vol. 7, p. 282. From 1932, when he succeeded Mr. Cosgrave, until 1938, he was president of the executive council and minister for external affairs of the Irish Free State. Passing through London on Jan. 14 on his return from Zürich, where he had visited an eye specialist, Mr. de Valera met Mr. Malcolm MacDonald, secretary for the dominions, and informally discussed Anglo-Irish relations. On March 17 he broadcast to Australia on the same subject, and in April issued the text of the proposed new constitution for "Eire," which was approved by a majority of the electors at a referendum in July. Speaking in the Dail on May 19, he reaffirmed the impossibility of resuming the disputed land annuity payments to Great Britain, and fore-shadowed the possible departure of Ireland from the League of Nations unless that body became more self-reliant and acted more on its own initiative. After the general election, Mr. de Valera was on July 22 re-elected president of the Free State executive council, with Labour support, by 82 votes to 52. On the coming into operation of the new constitution of Eire (see IRISH FREE STATE) on Dec. 29, Mr. de Valera automatically became "Taoiseach" or prime minister, and an *ex officio* member of the Council of State which will aid the president of Eire when he is elected.

**Devil's Island:** see FRENCH GUIANA.

**Diabetes.** Diabetic mortality advances. Among countries the peak, 22.5 per 100,000, was reached in the United States for 1935; for 1936, it was 27.8 among 187 American cities, 31.2 for the 5 largest American cities, and 34.9 for New York city. In general, the percentage increase is greatest in those regions where formerly the rate was among the lowest.

In Italy the rate was 4.5 in 1920, but reached 9.5 per 100,000 in 1934 and these figures are almost duplicated in the Canadian province of Saskatchewan. Eventually, when adjustments are made for the factors of age, social status, race and wealth and for uniformity of standards of diagnosis and collections of statistics, will diabetic mortality everywhere reach Boston and New York City levels? And where and when will diabetic mortality first begin to decline?

The use of protamine zinc insulin has steadily increased in the United States since it became generally available in February 1937. In certain clinics for fresh cases of diabetes it has largely displaced regular insulin and has even been employed along with regular insulin in the treatment of diabetic coma. Its action persists, although in lessening intensity, for more than 48 hours and herein lies danger unless food is ingested at sufficiently frequent intervals to replace loss of glycogen. Rather than raise the dose of protamine insulin unduly, frequently it is supplemented with regular insulin, both varieties being injected simultaneously before breakfast.

Hypoglycemic reactions occur with protamine insulin, but they are less frequent, less severe and somewhat different in type from those with regular insulin. Fatigue, nausea and headache are common whereas tremor, sweating and even hunger do not always appear. The onset of reactions is so gradual as often to escape recognition. Hypoglycemia without obvious signs may reach 0.030 per cent. For these reasons it is sound insurance to insert a small carbohydrate lunch between meals and on retiring, but patients prefer such procedures to multiple injections of regular insulin.

With protamine insulin the control of diabetes is better than with regular insulin. Protein catalysis and acidosis are lessened, hepatomegaly reduced and gain in weight favoured. The diabetic

approaches more closely to a normal individual. Insulin in the production of hypoglycemia for the treatment of schizophrenia has given additional emphasis to the varied mental and nervous phenomena so produced.

Glycosuria was produced by Houssay, Evans, and others with injections of anterior pituitary extract, but it remained for F. G. Young, a pupil of C. H. Best working in the National Research Council laboratory under Sir Henry Dale, to cause permanent diabetes in a dog by similar injections but repeated daily for 26 days or less.

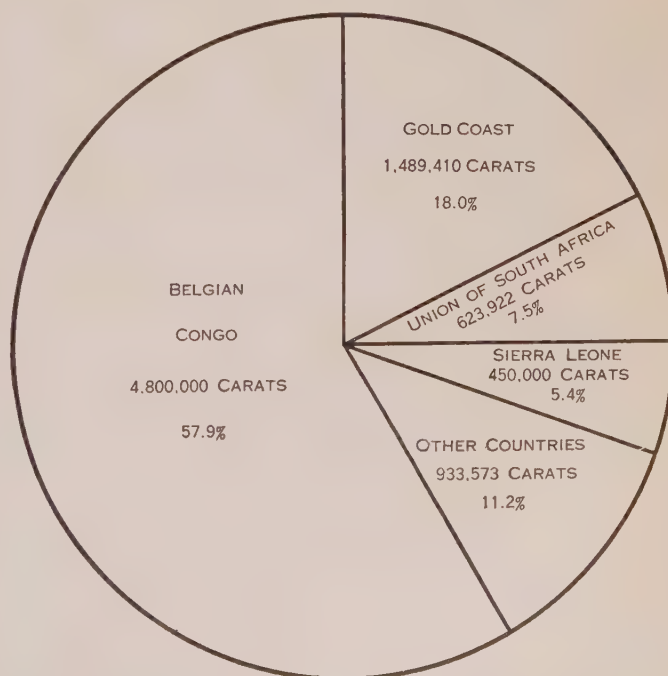
Dog 28 died of diabetic coma nearly 10 months after the last administration of pituitary extract.

Young's work already has been confirmed by Best. Young is the first to demonstrate the experimental production of diabetes mellitus without direct interference with the pancreas and this would appear to represent the most notable progress in the study of diabetes since the discovery of insulin. (E. P. Jo.)

**Diamonds.** The principal sources of supply are the Belgian Congo, the Gold Coast, South Africa, Angola, South-West Africa, and Sierra Leone, production in which countries is handled under a quota system by a central organization known as the Diamond Corporation, through the Diamond Trading Company.

Production in South Africa, which is one of the most important sources of supply of fine gems, was virtually suspended during the later years of the world depression, and was not resumed until March, 1936, and then only on a very small scale, deliveries meanwhile being made out of stocks. Production in South Africa was extended last year, but still fell considerably short of deliveries. Output in the other countries mentioned, whose customers, particularly in the case of the Congo, include a high proportion of industrial users, was largely increased, particularly in Sierra Leone, where a very rich field has been developed during the past few years.

Sales of uncut diamonds to the trade by the Diamond Trading Company reached last year the highest level since 1929, having amounted to £9,200,000, compared with £8,500,000 in 1936, £6,235,000 in 1935, and £3,719,000 in 1934. The expansion last year, reflecting in part an increase in prices fell considerably short



WORLD PRODUCTION OF DIAMONDS, 1936: total 8,296,905 carats



of expectations owing to the sudden transition from prosperity to depression in the United States, which normally absorbs from 70 to 75% of the total sales.

It is in the industrial sphere that the diamond industry has made its steadiest if least spectacular progress. More than half of the annual sales by weight, though only about 15% by value, is now for industrial uses, principally cutting, grinding, and other abrasive purposes; for the diamond is immeasurably the hardest and most enduring of known substances, and its uses are being constantly extended and cheapened.

Figures of world production in 1937 are not yet available. The caratage for 1936 amounted to 8,296,905, compared with 7,622,900 in 1935, that for Angola being 580,000, the Belgian Congo 4,800,000, the Gold Coast 1,489,410, Sierra Leone 450,000, South-West Africa 184,900 and the Union of South Africa 623,922.

(P. F.)

**Diatomite.** The accumulated siliceous remains of multitudinous numbers of microscopic organisms known as diatoms have found so many industrial uses that the product is now mined in large tonnages, and goes to the market as the mineral formerly called kieselguhr, but now usually known in English-speaking countries as diatomite.

Its chief uses are as a heat insulator, a filter-aid in many types of chemical industry, a filler in paints, varnishes, enamels and rubber, as an admixture in concrete, and as a carrier for insect poisons. Roughly, production is of the order of 100,000 tons annually in the United States, about half that amount in Germany and Denmark, 12,000 tons in Algeria, and smaller amounts in a number of other countries.

(G. A. Ro.)

**Diesel Engines:** see MOTOR CARS: *Trucks and Buses*; MOTOR TRUCKS.

**Dietetics.** An outstanding accomplishment of the year has been the recent synthesis of vitamin B<sub>1</sub> by Williams and Cline. The essential rôle played by this factor in tissue respiration finds further testimony in the discovery of Löhmann and Schuster that the vitamin is an integral part of an enzyme system which is concerned in cell metabolism. That another vitamin of this group is also essential to the function of living cells is seen in the observation of Dietrich and Pendl that the muscular contractions of a heart weakened by perfusion under low oxygen tension were restored to normal by the addition of minute quantities of riboflavin, and also in the discovery of Day and associates that riboflavin will prevent nutritional cataract in rats. Another member of the vitamin B complex, B<sub>6</sub>, or vitamin H, has been further identified by Booher as a relatively heat stable factor which is essential for growth and the prevention of an erythredemic dermatosis in rats. The existence of two additional members of this complex was discovered by Elvehjem and associates who described a "Filtrate Factor" and a thermolabile factor called Factor W. Among the ten different sterol derivatives which are known to exhibit the antirachitic properties of vitamin D, Bills and associates report at least two forms in the oils derived from the livers of various species of fish. The most recent addition to the list of vitamins is the antihæmorrhagic vitamin which Almquist has isolated in crystalline form.

Significant in the literature on minerals are the reports of Stearns and Stinger and of Macy and associates that both the iron and the calcium of spinach exist in such firm combinations as to interfere materially with their utilization, and that this food therefore, is not a particularly good source of these two elements. A hitherto unrecognized rôle played by mineral salts, notably by calcium and potassium, is seen in the discovery of Eppright and

associates that the presence of these salts in the intestinal tract is essential in preventing the development of putrefactive organisms.

Protein deficiency, according to Weech and associates produces in dogs a depletion chiefly in serum albumin, to a less extent in hæmoglobin, and to a relatively slight extent in serum globulin; the total protein loss is one-fifth from the circulation and four-fifths from the tissues outside the blood stream.

Of clinical interest is the perfection by Jeans and associates of their photometric technique by means of which they found that 19 to 35 per cent of the children examined by them were subnormal in respect to vitamin A. Of like interest are the studies of Faulker and Taylor who demonstrated that the ascorbic acid levels in the blood of patients suffering from infections were abnormally low. Of significance, too, is the description by Weiss and Wilkins of the cardiovascular disturbances which frequently follow nutritive deficiency, particularly the "beriberi heart," and the report by Means and associates of the occasional occurrence of thyrotoxicosis resulting from malnutrition.

Outstanding among the researches in deficiency diseases were the studies on pellagra of Spies and associates who demonstrated that endemic pellagra, like alcoholic pellagra, responds remarkably well to a high calorie diet containing an abundance of protein with large amounts of yeast, and to liver extract by mouth or parenterally. Likewise, Miller and Barker in their studies on Sprue achieved excellent results with diets high in protein (large quantities of rare, red beef), and low in carbohydrate and fat. Of every day interest are the studies of Alvarez upon digestive discomforts which he finds are frequently due to allergy or to other food idiosyncrasy; he emphasizes the diagnostic value of written dietary records and of elimination diets.

(J. S. McL.)

**Dinosaur National Monument:** see NATURAL HISTORY MUSEUMS.

**Diphtheria:** for statistics see PUBLIC HEALTH SERVICES.

**Diplomatic Services:** see AMBASSADORS AND ENVOYS.

**Dirigibles:** see AVIATION, CIVIL: *Airships*.

**Disarmament:** see ARMIES OF THE WORLD; LONDON NAVAL CONFERENCES; REARMAMENT.

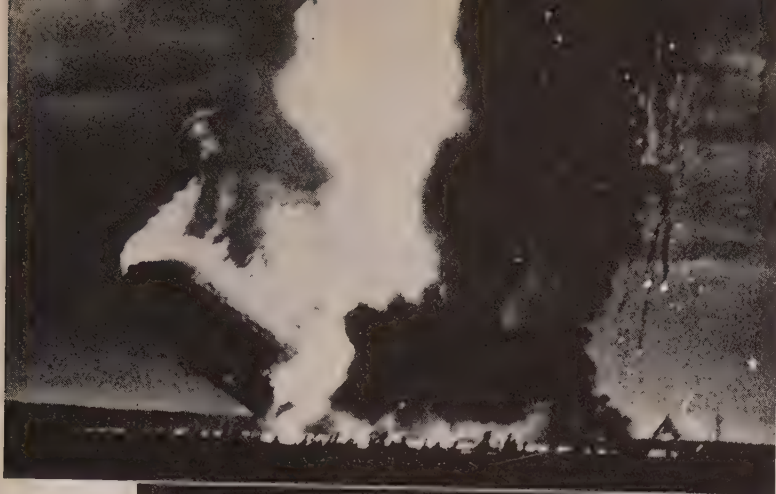
**Disasters.** During 1937 the toll of losses in life and property in accidents and disasters included the following:

#### Aviation

- Jan. 12 Burbank, Calif. Aeroplane hits mountain. 2 killed including Martin Johnson, explorer.
- Feb. 7 Louisburg, N.C. Privately owned aeroplane crashed. 4 killed.
- Feb. 9 San Francisco. Aeroplane with 11 occupants plunged into bay.
- Feb. 19 Australia. Brisbane-Sydney Route. Aeroplane crashed. 5 lives lost.
- Mar. 22 England. Duchess of Bedford in solo flight disappeared along East Coast.
- April 3 Arizona. Aeroplane bound for New York crashed at altitude of 8,500 feet. 8 killed.
- May 6 Lakehurst, N.J. German airship *Hindenburg* destroyed by fire. 56 out of 97 occupants killed.
- May 29 Empire Air Day in Great Britain. Nine accidents, 17 killed, including woman ill in a house struck by civilian aeroplane.
- June 2 Isle of Aulin, Chile. Aeroplane crash. 9 killed.
- June 7 Great Britain. During week-end, 7 of Royal Air Force and one civilian were killed in aeroplane accidents.
- July 2 Bound for Howland Island in Pacific, Amelia Earhart with pilot, Capt Fred Noonan, lost. Supposed to have run out of fuel.
- July 28 Near Brussels. Dutch aeroplane struck by lightning. 15 occupants killed.
- Aug. 2 Wadi Halfa, Sudan. Italian aeroplane crashed. 9 killed.
- Aug. 3 Wreckage of Pan-American seaplane discovered by U. S. navy plane 20 miles off coast of Colombia. 14 passengers missing.
- Aug. 12 Russian aeroplane carrying Sigismund Levanevsky, "the Soviet Lindbergh" and five assistants lost in Arctic after crossing North Pole in effort to pioneer a plane route to the United States for passengers and freight. Search by Sir Hubert Wilkins and others unavailing.



LESS THAN TWO MINUTES after the fire broke out the "Hindenburg" was completely engulfed in flames and smoke



THE GERMAN ZEPPELIN "HINDENBURG" prepared to land at U.S. Naval Air Station, Lakehurst, New Jersey, at end of a trans-Atlantic voyage, May 6. As a ground crew was towing the great ship to the mooring mast flames of undetermined origin suddenly burst from the ship

FLAMES from 6,700,000 cubic feet of inflammable hydrogen gas, which inflated the "Hindenburg," burn out quickly







**RUINS** of the New London, Texas, public school, where an explosion of gas on March 18, 1937, wrecked the building and killed 427 children and teachers

Nov. 6 United States. 18 persons killed in 3 motor accidents each costing 6 lives, near Rhinebeck, N.Y., Knox City, Missouri and Adairsville, Georgia.

Nov. 29 Amsterdam. Prince Bernhard's roadster collided with motor truck. Prince injured.

## Aviation (Continued)

- Sept. 11 Scarborough, England. King's Cup Air-Race. Aeroplane crashed. 2 killed.
- Sept. 15 Near Lima, Peru. Aeroplane crashed against hill. 8 killed.
- Sept. 16 Afghanistan. 3 German fliers, en route from An-si-chow in Province of Kansu for Kabul are declared missing.
- Sept. 30 Essex, England. Collision of two Royal Air Force planes. 3 killed.
- Oct. 2 Near Athens. British airliner crashes. 3 passengers drowned.
- Oct. 15 Island of Banda, East Indies. Dutch navy plane fell into sea, 5 killed. Third Dutch Indies plane crash in 10 days. Total fatalities, 17.
- Oct. 17 Chalk Mountain, Wyo. Aeroplane crashed. 19 killed.
- Oct. 20 Spilsby, Lincolnshire. R.A.F. plane crashed. 3 killed.
- Nov. 3 Near Seattle, Wash. Navy planes collide. 5 killed.
- Nov. 6 Near Ostend, Belgium. Aeroplane from Cologne to London hit chimney of factory. 8 persons and 3 of crew killed, including 5 members of royal family of Hesse.

## Fires and Explosions

- Jan. 17 Explosion of sulphuric acid on Canton-Hongkong train. 80 killed, 50 injured.
- Jan. 25 Antofagasta, Chile. Premature explosion of 1,500 tons of dynamite in copper mine killed 16 workmen and injured 201.
- Feb. 5 Louisville, Ky. Explosion in building kills 10 persons.
- Feb. 13 Antung, Manchoukuo. Theatre fire, 658 bodies recovered.
- Feb. 18 San Pedro, Calif. Shell bursts in breech of naval gun. 6 killed, 10 injured.
- Mar. 18 New London, Texas. Explosion of natural gas in school. 413 children and 14 teachers killed.
- Mar. 28 Dubois, Pa. Explosions kill 2 miners and 7 rescuers.
- July 2 Staffordshire, England. Explosions in coal mine. 30 killed, many injured.
- July 9 Skanslandet, Finland. Explosions of ammunition. 11 killed, widespread damage.
- Aug. 5 Paterson, N.J. Gas explosion in plant. One killed, 40 injured.
- Aug. 18 Philadelphia Navy Yard. Steam pipe explodes on destroyer "Cassin." 7 killed, 4 critically injured.
- Aug. 22 Cody, Wyo. Forest fire. 14 killed, 50 injured.
- Dec. 6 Gloversville, N.Y. Explosion in children's store, attributed to oil burner. 5 killed.

## Motor Traffic

- Jan. 25 Florida motorbus from Miami to Tampa overturned in canal. 17 of 32 occupants drowned.
- Mar. 24 Salem, Illinois. Motorbus burst tire. 18 killed, 5 injured.
- June 4 Shiloh Springs, Oregon. Motorbus overturned, 7 killed.
- Oct. 22 Mason City, Iowa. Streamlined train struck school bus. 9 killed, 21 injured.
- Oct. 30 Prince Victor Nityendia Marayan of Cooch Behar, uncle of the Maharajah, killed by motor car.

## Miscellaneous

- Feb. 17 San Francisco, Calif. Scaffolding on Golden Gate bridge collapses 10 killed.
- July 24 Countess of Cardigan (formerly Miss Joan Salter) killed by fall from hotel window.
- July 25 Manhasset, Long Island. Vivien Burnett, original of "Little Lord Fauntleroy" rescued 4 persons from an overturned boat and himself collapsed.
- Sept. 25 Alexandria, Egypt. 22 persons killed and many injured in a crush of crowds to honor King Farouk.
- Oct. 25 United States. Distribution of new drug, elixir of sulphanilamide, accompanied by 46 deaths.
- Dec. 29 Oneida, N.Y. Dr. Toyokichi Iyenaga, Japanese diplomat and lecturer, drowned while fishing through ice.

## Natural Disasters

- Jan. 22 In Mississippi, Allegheny and Ohio valleys. Disastrous floods begin, causing an estimated 900 deaths.
- Jan. 29 Northern Europe. Violent storms. Loss of life exceeds 100. Many ships wrecked.
- Jan. 30 Alpine avalanche kills 23 Italian soldiers.
- April 27 Further floods along Allegheny, Monongahela and Ohio valleys. In London, Ontario, flood costs 5 lives and serious damage.
- May 27 Tlalpujahua, Mexico. Cloudburst washes mine tailings onto dwellings. 168 reported dead.
- June 15 Nanga Parbat, Himalayas. Avalanche believed to have overwhelmed German expedition led by Dr. Wien. Six Germans and 9 native porters missing.
- Aug. 11 New Brighton, Staten Island. Downpour causes collapse of buildings. 19 inmates killed.
- Menlo Park, New Jersey. Lightning struck Memorial Tower on site where Edison invented electric bulb. 130 foot structure fell to ground.
- Oct. 28 Dmeir, Syria. Cloudburst overwhelms many houses. 100 missing.
- Nov. 13 Greek freighter "Tzenny Chandris" foundered off North Carolina 7 lives lost.

## Railways

- Mar. 13 Corquoy, France. Express derailed by tree fallen across tracks. 15 killed, 20 injured.
- April 2 London, Battersea Park. Collision of electric trains. 10 killed, 11 injured.
- July 17 Worst railway accident in India. Delhi-Calcutta express derailed. 107 persons killed.
- July 29 Paris-St. Etienne express wrecked. 30 killed, 40 injured.
- Sept. 5 Neuss, Germany. Train wreck. 15 Catholic pilgrims killed.
- Nov. 2 Near Sao Paulo, Brazil. Train smash. 9 killed, 70 injured.
- Dec. 10 Castlecary, near Falkirk, Scotland. Railway collision. 35 killed. 63 injured.

**Disciples of Christ**, a religious body of the United States and Canada which received its initial impulse in 1809, dates its separate existence from 1830 and its



nationally organized missionary work from 1849. It is congregational in polity. General agencies for missionary and benevolent work include: the United Christian Missionary Society, Stephen J. Corey, president, with divisions of home and foreign missions and Christian education; a Board of Church Extension; a Pension Fund; an Association for the Promotion of Christian Unity; and a College Association, all with headquarters at Indianapolis, Ind.; and a National Benevolent Association, with headquarters at St. Louis, Mo., which conducts six homes for children, six homes for the aged and one hospital. The 1937 convention was held at Columbus, Ohio, with A. W. Fortune as president. F. D. Kershner is president for 1938. There are also many independent missionary agencies which do not report to this convention, and State missionary societies which report to State conventions. A World Convention is held quadrennially (Toronto, Aug. 6-12, 1940). Receipts by all national and State boards for the last fiscal year totalled \$2,928,476.82; receipts by churches for local expenses, \$9,768,527.71. The membership in the United States and Canada is 1,607,716. The Disciples of Christ participate in the work of the Federal Council of Churches of Christ in America, the present president of which, Edgar De Witt Jones, is a Disciple. The church was represented at the 1937 conferences at Oxford and Edinburgh, and is taking a part in the steps leading to the organization of a World Council of Churches. (W. E. G.A.)

**District of Columbia:** *see* WASHINGTON, D.C.

**Divorce.** Divorce has not been prominent either in public discussion, legislation, or sociological investigation during 1937. Although nearly half the States of the Union have had legislatures in session during the year, the majority of these have passed no laws with regard to divorce. Three have made substantial changes in divorce legislation. Idaho has changed the time required for the getting of a divorce from ninety days to six weeks. Maryland has added five years of separation without reasonable expectation of reconciliation to its grounds for divorce. Montana has added incurable insanity, under the following conditions: testimony of competent physicians, evidence that the insane person has been regularly confined in a State institution for the insane for five years, the giving of notice of the application for divorce to blood relatives or guardian and to the superintendent of the institution, these persons being entitled to appear and be heard on all the issues. The status of the parties as to support and maintenance

of such insane persons is not altered by the granting of the divorce.

Although many prominent Americans have been divorced in 1937, these marital failures have not had a large place in public interest. The courts have wrestled with the legal entanglements associated with divorce. The majority of their decisions have had to do with questions of alimony and foreign jurisdiction; that is, the status of persons affected by a divorce that has been granted in a foreign country or in some other State. Alimony is proving itself one of the most vexing of the questions associated with the American divorce system. One suggestion during the year has been that it be replaced by some sort of marriage insurance. Divorce cases constitute a large part of the civil load of the State courts. In a study of law administration in Connecticut, published in 1937, divorce actions numbered 24.6% of the total number of cases, or, without annulment, one-fourth of all the cases.

There has been a marked trend in the ecclesiastical attitude toward divorce, the churches showing evidence of a feeling of greater responsibility to aid those marrying to achieve success. The feature of the year has been the spread of instruction in preparation for marriage in the churches, in popular magazines, and especially in the colleges. At the general convention of the Episcopal Church the subject of the re-marriage of divorced persons received more widespread public interest than any other. The proposal to give the bishops wide discretionary power in the matter of such marriages, although overwhelmingly defeated, was aggressively supported by some prominent members of the church.

(E. R. G.)

**Great Britain.**—The Matrimonial Causes Act, 1937, timed to come into force on Jan. 1, 1938, is no doubt the most important English statute relating to divorce since the original act was passed in 1857, permitting divorce for adultery on the petitions of husbands, and for adultery coupled with desertion or cruelty on those of wives. By the Matrimonial Causes Act, 1923, the need for proof of desertion or cruelty in the case of a wife's petition ceased, so that either spouse could thereafter petition alleging adultery only. The new act adds as causes for divorce, desertion for three years, cruelty, and incurable insanity after five years' continuous care and treatment of the respondent. In this respect the English divorce law is enlarged so as to approximate to the majority of Continental, American, and Dominion models. On the other hand, by a provision which does not appear to have a parallel elsewhere, divorce is forbidden during the first three years of



U. S. COAST GUARD cutter "Chelan" rescues crew of the sinking Norwegian freighter "Bjerkli," after the freighter sprang a leak 500 miles east of the Nantucket lightship



marriage unless the case appears to the court to be "one of exceptional hardship suffered by the petitioner or of exceptional depravity on the part of the respondent." The court is thus given a discretion as to the exercise of which a practice will no doubt be laid down to bind the judges. The question whether judges who are given judicial discretion should be fettered by precedents is of course controversial, but in the divorce court it is answered in the affirmative.

A provision of great importance indirectly is that in section 11 of the act, adding adultery as a ground for a separation order by a magistrate in favour of a wife. Directly, of course, it is of no special importance, for neither husband nor wife is required by law to live with an adulterous spouse, unless the adultery has been condoned. Section 6, however, provides that high court judges may treat a magistrate's order as proof of the facts on which it is based, provided that the petitioner gives his or her evidence in the high court. This again is a matter of discretion, and very much will depend on its exercise. If the court interprets its powers broadly, the expense, serious to the large classes who are just above the tests for "poor persons" of bringing witnesses to the high court or to assizes will no longer be a burden. The reproach of "one law for the rich, and another for the poor" perhaps has been hitherto more true of the English divorce law than of any other in the realm; but if the act is generously construed, the disability of poverty will be greatly mitigated.

Another point of doubt which the court itself will have to clear up is whether the act is retrospective, *i.e.*, whether a petitioner can plead acts of cruelty before 1938, or periods of desertion or insanity incomplete unless time has run from some date previous to that year. This is a matter of law, and for safety should go to the court of appeal or even to the House of Lords before any decree absolute is granted in such cases. The act is clear and definite enough, but judges require more than a simple affirmation before they will declare an act retrospective and so possibly disturb vested interests.

Occasionally a petitioner, usually a wife, will obtain a decree nisi, and, herself not desiring to remarry, then deliberately refrain from applying to have it made absolute, either because she wants more money than she thinks the court will grant her and hopes to make a bargain with her husband accordingly, or to prevent his remarriage. In such case the act provides that the respondent himself may apply for the decree nisi to be made absolute, and the court may exercise a discretion in his favour.

Sometimes husband and wife have drifted away from each other, and one may be ignorant whether the other is alive or dead. The old law was that after seven years of ignorance of (but not wilful blindness to) the other's continued existence, remarriage without fear of prosecution for bigamy was possible, but if the absent spouse returned, the second marriage was void. The act (section 8) provides for presumption of death and consequent dissolution of marriage in the case of an absent spouse. The petitioner must adduce "reasonable grounds" for supposing his or her spouse to be dead, but the burden of proof shifts after seven years of unexplained absence. This provision should be of great value to those classes who cannot afford the heavy expense of tracing a missing person. (See LAW AND LEGISLATION.) (A. FEL.)

**Docks and Harbours.** Important harbour and waterway improvements of the United States are usually carried out by the Federal Government through the Corps of Engineers, War Department, U.S. Army. About 1,000 projects were in force on June 30, 1937, with active operations under way on over one-third of the total. By the River and Harbor Act, approved August 26, 1937, Congress authorized addi-

tional improvements estimated to cost over \$50,000,000 at 133 localities in the United States and at eight harbours of U.S. island possessions or Alaska. Among the more important projects under way or authorized are the enlargement of the Cape Cod canal to a depth of 32 ft. and widths of 500 ft. or more, to provide a safer and more direct route for coastwise shipping than the exposed channels outside the Cape; deepening the main ship channel through New York harbour to West 59th street, Manhattan, to 45 ft. or more, to permit the safe and expeditious movement therein of the largest transatlantic liners; the deepening of the major portions of Staten Island sound and approach channels to 35 ft. for the accommodation of the largest oil tankers; enlargement of the Chesapeake and Delaware canal at 27 ft. depth for use by coastwise shipping between Delaware river points including the Port of Philadelphia, and Chesapeake Bay harbours including the Ports of Baltimore, Annapolis, and Norfolk; the deepening of the Sabine-Neches waterway, the Houston Ship channel, and certain other Gulf Coast channels to 34 ft., for the accommodation of heavily laden oil tankers; extensive deepening of the channels and anchorages of San Diego bay for both commercial and naval use; the construction of break-waters aggregating 5½ mi. in length for the protection of Los Angeles outer harbour, and the dredging of extensive areas in Los Angeles-Long Beach harbour to depths of 40 and 35 ft., for use by naval craft and commercial shipping; construction of a large dam and lock on the Columbia river at Bonneville, 39 mi. above the present head of deep-draft navigation at Vancouver, Wash., and dredging to extend ocean navigation on that stream to The Dalles, Oregon, 190 mi. above the ocean; the deepening of channels connecting the Great Lakes and of many of the more important lake harbours to permit full loading of large cargo carriers engaged in the iron ore trade; and continued extension of the shallow-draft protected waterways comprising the Atlantic and Gulf Intracoastal and Inland Waterway Systems for barge, tanker and pleasure boat traffic, including complete canalization of the upper Mississippi river to Minneapolis, Minn.

Terminal facilities were extensively improved and extended at many U.S. harbours. Typical are the new concrete pier of the Sinclair Refining Company on the Delaware river at Marcus Hook, Pa., which has a frontage of 1,000 ft. and water depths of 32 to 34 ft.; the 500-foot concrete wharf of the Alabama State Docks Commission at Mobile, for use in connection with a new cold storage warehouse; the concrete wharf and steel warehouse of the local navigation district at Brownsville, Texas; a new passenger and cargo terminal with modern fruit-handling equipment at Los Angeles harbour, and numerous others.

During the year the City of New York, under Federal supervision, placed in operation a foreign trade zone at which goods may be unloaded, stored, manipulated and reshipped to foreign points without payment of duties and without intervention of custom officials except under certain conditions. This zone is on Staten Island in New York harbour. It embraces five piers and six slips, each of 30 ft. depth, approximately 300 ft. width, and 1,025 to 1,090 ft. length. Authority has been secured for the operation of a similar zone by the Alabama State Docks Commission at the Port of Mobile; and preliminary consideration has been given the establishment of foreign trade zones at other harbours of the United States. (J. L. S.)

Much additional work has been created by the growing tendency, remarked in most countries, to concentrate trade in a few of the bigger ports. While this is an advantage in many ways, it brings obvious problems in labour, distribution, and safety in war-time; the last has caused particular concern in Great Britain owing to food supplies. The question of grouping ports all-round the British coast under a few big authorities has been raised but strongly opposed. That tendency, however, is increasing in many



countries, conspicuously Germany.

The year has been more remarkable for the starting or continuation of new schemes than for any striking technical development in port construction. Improved crane equipment, usually electric, has had to be provided, and the necessity for having air facilities as near to the port as possible has presented many difficulties in planning, especially in the older ports.

New schemes have been started all over the world. Some have been dictated by military or political considerations, *e.g.*, in Japan and her possessions, where an increasing number of areas are being screened from public view, and on the Italian Red sea coast, where the military demands of Abyssinia are obviously great. Great Britain is expected to start counter-works shortly.

The scheme to construct a huge new free port at Montier bay, on the south coast of Newfoundland, has been revived and is being considered. The bay is large, is ice-free and comparatively fog-free, while the port would provide the most direct cargo route between northern Europe and the greatest American trading area, clearing facilities for a huge entrepôt trade, and would be most advantageous for transatlantic air services. Against these factors the cost would be very high, and Port Churchill has taught caution by showing the difficulties of diverting trade from its normal channels. The principle of free ports is also a matter of argument, both in Canada and the U.S., where one is suggested at Boston, Mass.

The possibility of a large volume of shipping being diverted from the Suez route to that round the Cape of Good Hope, either for safety or to save canal dues, was one of the factors which decided the South African Government to launch a great improvement scheme at Capetown, where approximately £6,000,000 are to be spent on improving the docking and dry-docking facilities, reclaiming land for railway connections, etc. In the meantime, the Government is doing all that it can, by better facilities of all kinds and reduced rates, to make the Cape route attractive.

A big improvement scheme has been started in Montreal, partly due to the possibilities of Port Churchill in the grain trade of the future. The Argentine Government had published a huge scheme of port improvements at the end of 1936, and, as water is generally their great problem, had planned the building of 23 dredgers; owing to the increase in shipyard prices, only one of them was actually ordered.

In the Indian ocean, valuable improvements have been effected in Beira, Portuguese East Africa, for the benefit of the growing exports of its hinterland, and a five-year plan has been started for the modernization of Colombo (Ceylon), with special attention to the bunkering of coal and oil, in face of the growing competition of the South African ports.

On the continent of Europe, among the most interesting events during the year have been further steps in the organization and rationalization of German ports, the steady progress of the schemes of the Italian Government, particularly conspicuous at Genoa and Naples, and the improvements in the port of Calais, where the safety of shipping and the facilities for handling large quantities of cargo have received equal attention. The Polish Government proposes further great improvements at Gdynia, which, a small fishing village only a few years ago, has been developed into a great national seaport in a very short time, but which would be terribly vulnerable in the event of war in the Baltic. In this case, finance is the obstacle.

In the provinces of Great Britain and the Irish Free State, one of the most interesting projects is certainly that of Galway, still aspiring to an important position in transatlantic trade, where the scheme authorized by the Dublin Parliament in 1935 is now being put in hand. The contract for the first part has been accepted and is to be completed by 1939. Transatlantic liners are

still to handle their passengers by tender in the bay, but it will be possible at all states of the tide instead of during only six hours. Cargo steamers up to 6,000 tons gross will be accommodated in the dock.

Big dock-extension schemes are under way at Sunderland, with special reference to the coal trade, and on the Clyde the dredging operations demanded by the passage of the new Cunard-White Star liner to the sea—the anxiety about the passage of the “Queen Mary” was a lesson fully appreciated—have been combined with shrewd port developments in Glasgow and its satellite harbours. The abandoned shipyard site at Meadowside has already been bought for harbour extensions.

In Great Britain, however, the greatest interest is in the Port of London, where the authority has prepared a bill for Parliament permitting further borrowing to the extent of £12,000,000 for the modernization and improvement of the port.

Until the bill becomes law, the details of the developments in mind are not published, but the possibilities of the construction of a fourth dock in the “Royal” system, foreshadowed at the end of 1936, “when increased trade demands,” are widely discussed. This would lie to the north of the Royal Albert dock, partly over developed land and partly on marshes bought by the old dock company in the '50s.

In the whole world the two problems which have aroused the greatest attention have been dock labour and safety precautions with oil. Many concessions have been made to labour, with regard to pay, hours, and decasualization, but the year has seen a large number of strikes.

(F. C. Bo.)

**Dodecanese, The.** An archipelago in the Aegean, lying off the Turkish Asiatic coast and comprising 12 islands; taken from Turkey, by Italy during the Italo-Turkish war, 1912, Italian ownership being confirmed by the Treaty of Lausanne, 1924. Land area, 977 sq.mi.; pop., 134,650; the islands are ruled from Rhodes, the capital (pop. 25,400), by a governor subject to the foreign ministry.

Agriculture (grapes, olives, tobacco, etc.) and sponge-fishing are the principal industries; but the chief value of the islands today lies in their strategic position. From Leros, now a strong air-naval base, to Tobruk, Italy's eastern-most Libyan base (60mi. from the Egyptian frontier) is 390mi., and the submarine and air control of this line, especially if combined with similar control of the 270-mile line from Sicily to Tripoli, would give any Power attaining it a strangle-hold on all traffic from Gibraltar to the Suez canal.

**Dog Shows:** *see* SHOWS: *Dogs.*

**Dole,** the colloquial misnomer for the payments made to unemployed persons in Great Britain under the state contributory insurance schemes. From April 1, 1937, the “waiting period,” during which no benefit is paid at the beginning of unemployment, was reduced from six days to three, and an increase was authorized in the number of additional days' benefit that can be drawn after practically continuous employment for five years.

A parliamentary bill that received its second reading in Dec. 1937, provides for the inclusion of outdoor domestic servants (grooms, gamekeepers, chauffeurs, etc.) in the scheme, and for disposal of the surplus of the unemployment fund, which is expected to reach £82,000,000 by the end of 1938. About 13,500,000 persons are insured under the state scheme, the annual income of which is about £65,000,000, and the expenditure about £45,000,000. (*See* RELIEF.)



**Dollar, Purchasing Power of:** see PURCHASING POWER OF MONEY.

**Dominican Republic,** a West Indian republic occupying the eastern two-thirds of Hispaniola; language, Spanish; capital, Ciudad Trujillo (formerly Santo Domingo); president, Rafael L. Trujillo Molina. The area is 19,325 sq.mi. Population (1935 census) 1,478,121. It is predominantly mulatto and negro, but whites are politically important. The chief cities are: Ciudad Trujillo, the oldest city in America, 50,000; San Pedro de Macoris, 20,000, and Santiago de los Caballeros, 20,000. Since 1930 the country has been under the dictatorship of President Trujillo. During 1937 the Trujillo policy of material improvements was continued. The principal events were in connection with the disorders attending the expulsion of Haitians, which aroused considerable feeling between the countries and resulted in a Haitian request for an international investigation. This was opposed by President Trujillo (see HAITI). As the year closed, there were rumours of revolutionary activity in anticipation of the presidential elections of 1938. There are over 375 mi. of railways; the highway system has undergone extensive improvement and development. In 1935 imports (largely textiles, food-stuffs, and manufactured articles) aggregated \$9,790,053, chiefly from the United States (48.4%) and Japan (11.8%). Exports (sugar, 61%; cacao, 13.5%; coffee, 8%) totalled \$15,487,149, largely to Great Britain (47%), the United States (26.9%), and France (12%). The Dominican Republic is primarily agricultural, with sugar the most important crop, largely for export to Great Britain.

It is fourth in world production of cacao. The monetary unit is the peso, equal in value to the U.S. dollar. The national budget in 1936 was \$10,500,000, of which 9.4% was allotted to education. Fiscal control is in the hands of a financial adviser nominated by the president of the United States. In 1936, 947 primary and secondary schools had an enrolment of 104,882, with 13,500 additional students in 585 night schools. (L. W. BE.)

**Donations and Bequests.** The number of newly established foundations, endowments and trust funds organized for the benefit of the public has continued to grow during the year. Complete information is nowhere available as to the total now chartered, but they run close to 280. Upwards of 50 of these appear to be foundations in the sense in which the term was originally used, and thus having substantial endowments. About 25 have principal funds of \$10,000,000 or over.

Among the largest created during 1937 were: Charles Hayden Foundation, New York, for the education of young boys and young men and the advancement of their moral, mental, and physical well-being; funded at approximately \$50,000,000. Andrew Mellon Educational and Charitable Trust, Washington, D.C., for religious, charitable, scientific, literary and educational purposes, with large funds to come, but the amount not yet announced. Bache Foundation, New York, for the promotion and encouragement of art, and particularly for a public museum in New York, with funds reported as approximately \$15,000,000. George F. Baker fund, New York, for religious, charitable, scientific, literary or educational purposes; funded at approximately \$15,000,000. George and Frances Ball Foundation, Muncie, Ind., for religious, charitable, and educational purposes, with a fund probably less than \$10,000,000 as first reported.

Jane Coffin Childs Memorial fund for medical research, Yale university, for research into the causes and origins of cancer, with funds said to be in the neighbourhood of \$10,000,000. Zachary Smith Reynolds Foundation, \$7,000,000 to be used exclusively

in North Carolina to fight syphilis.

Among other smaller endowments whose capital funds were either unannounced or believed to be in smaller figures, were: Louis and Henrietta Blaustein Foundation, Baltimore, \$500,000 for charity, education and research; Clara Elizabeth fund, Flint, Mich., \$250,000 for attacking infant and maternal mortality; Dazian Foundation for medical research, New York; the Finney-Howell Research Foundation \$300,000 for the study of the causes and cure of cancer; Good-will fund, Boston, for charitable and educational purposes, approximately \$2,000,000 reported; Solomon R. Guggenheim Foundation, New York, for the promotion of art; and the Charles R. Walgreen Foundation, University of Chicago, \$550,000 for the study of American institutions.

The Southern Education Foundation was organized in July, 1937, with a capital of \$3,000,000 by consolidation of the former George Peabody fund, John F. Slater fund and the Anna T. Jeanes fund. Though chartered in 1936, the Alfred P. Sloan Foundation of New York, for research and education in economics, was endowed in 1937 with \$10,000,000 by Alfred P. Sloan, Jr.

An additional gift by F. S. Kresge of about \$12,500,000 to the Kresge Foundation was reported by its president; and other additions to existing foundations were made during the year. Notably among the latter were the funds added to the National Foundation for infantile paralysis by the celebrations of the President's birthday.

A few increments to the number of community trusts (*q.v.*), these being endowments held and managed by trust companies with disbursements of income directed by a committee partly made up of public officials, were noted in the year. Those which reported holding endowment funds totalled 28. (S. M. HA.)

**Doumergue, Gaston** (1863-1937), French statesman, who was president from 1924 to 1931 and twice premier, was born in Aigues-Vives, Aug. 1, 1863. At thirty years of age, he entered the Chamber of Deputies and rose to serve in the cabinets of Combes, Clemenceau, and Briand, himself forming a cabinet in 1913. As president, he followed an intransigent policy toward Germany. His administrative methods and philosophic attitude helped him to weather the fifteen cabinet crises which occurred during his presidency. He died on June 18, 1937, in his native town. For further details of his career, see *Encyclopædia Britannica*, vol. 7, p. 557.

**Drama:** see THEATRE.

**Dress:** see FASHION AND DRESS.

**Drinkwater, John** (1882-1937), British poet, playwright, and critic, whose greatest success was *Abraham Lincoln* produced in 1918. He scored again in 1929 with the comedy, *Bird-in-Hand*. Among his more recent books were *This Troubled World* (1933), *Summer Harvest* (1934), *The King's Reign* (1935), and his autobiography—*Inheritance* (1931) and *Discovery* (1932). He prepared the official programs for King George V's silver jubilee and King George VI's coronation.

He died in London, March 25, 1937. The reader will find an account of his career in the *Encyclopædia Britannica*, volume 7, page 664.

**Drought.** Each continent of the earth has within its boundaries one or more regions of such geographic position and topography that they are normally subject to periods of aridity or semi-aridity. In these regions droughts are not unexpected, although they vary in frequency, duration and intensity. During 1937 at least one droughty region of each continent, except Europe, experienced some degree of aridity or drought,



but throughout the world, droughts were not unusually numerous. Only in the northern Great Plains region of North America, in East-Central China, and in Morocco were droughts abnormally severe.

The prairie provinces of Canada suffered most acutely because of subnormal rainfall in the spring and early summer. Soil dried out and began drifting in Alberta and Saskatchewan before the middle of May. Some rain fell in Alberta about June 15, but Saskatchewan did not get relief from the drought until late in July, when general rains occurred. The most serious drought damage was inflicted on the wheat crop, although feed crops and the livestock industry of Alberta, Saskatchewan and Manitoba suffered generally.

In the United States, the 1937 drought was as critical but less extensive than in 1934 and 1936. High winds and a shortage of precipitation practically ruined most of the crops in 14 counties of North-eastern Montana and North-western North Dakota. Less critical, yet serious drought conditions prevailed in other sections of Montana and North Dakota, and in parts of Wyoming and much of South Dakota. In the southern Great Plains rainfall varied from 50% to 80% of normal and drought affected in varying degrees approximately 30,000,000 acres.

Argentina, Brazil and Ecuador in South America, experienced drought. Aridity in Argentina was not as intense as in 1935, but in combination with depredations by locusts and boll worms, was sufficient to reduce substantially both the cotton and wheat crops. Hardest hit were the areas around Buenos Aires and Cordoba. Several thousand square kilometres in three States of North-eastern Brazil were affected by severe drought early in 1937, while in Ecuador the aridity was reflected in a shortage of wheat at the end of the year.

A relatively hot, dry summer in East-Central and South-eastern Europe resulted in some crop reductions in the Danube basin and the Ukraine, but generally drought was not a serious problem on this continent.

During the first three months of the year parts of China experienced an acute shortage of rainfall. January wheat sowing was curtailed in North-eastern China and in the lower Yangtze valley. By March the drought in Sze-chuan province was termed the worst in the last quarter century. In South-eastern Honan province heavy losses of autumn and winter crops were recorded. Throughout the region peasants were threatened with famine and refugees concentrated in metropolitan areas. Rains in May served to ameliorate conditions, although the early drought resulted in a distressing food problem in Kweichow and Kwangsi provinces.

Prolonged drought created a serious situation in Northern Africa, particularly in French Morocco. Customary winter and spring rains failed to come. Seed failed to sprout, some oases dried up, palm and date trees withered, and cattle died, forcing plainmen to the hills. At one time the Government deemed it necessary to ban exports of wheat, barley and corn. Excessive drought in the North-western Sahara drove many caravans into French Morocco, and in Rhodesia aridity was held responsible for a substantial reduction in the tobacco crop.

Dry weather in Australia during June and July delayed wheat sowing in New South Wales and Victoria. By the end of September, a prolonged lack of moisture had caused deterioration of the wheat crop, although rains early in October brought some relief. (See also AGRICULTURE: *Drought and the Dust Bowl*; DRY FARMING; DUST STORMS.)

(H. H. BE.)

**Drugs and Drug Traffic.** In the surveillance of pharmaceuticals, proprietary preparations, crude drugs, veterinary products and the like that enter interstate or foreign commerce, the Federal Food and Drug

Administration during the fiscal year 1937 examined 7,536 samples of domestic drug products and 7,706 samples of imported drug products. As a result, 613 court actions were instituted. Of the shipments offered for entry into the United States, 1,359 were denied entry. The most common violations of the Federal Food and Drugs Act in commerce in drugs were false and fraudulent therapeutic claims and variations from pharmacopoeial or national formulary requirements.

During September and October of 1937 at least 73 persons died as a direct result of taking the drug known as "elixir sulphanilamide," which was manufactured in Bristol, Tenn. Twenty other persons who took the "elixir" died, but it was not established that this drug was exclusively responsible. The lethal effect of the "elixir" was due to its content of diethylene glycol, which was used as a solvent in making a liquid preparation of sulphanilamide, usually administered in tablet or powder form. Sulphanilamide itself is a valuable drug and was not responsible for the disaster. The Federal Food and Drugs Act does not require that new drugs be tested before they are placed on sale, and the manufacturer made no tests for the effects of the "elixir" on human life. Since the Federal act contains no provision against dangerous drugs, seizures had to be based on a charge that the word "elixir" implies an alcoholic solution, whereas this product was a diethylene glycol solution. All of the product that was not consumed has been accounted for and removed from the market by Federal or State seizure or by other means.

Efforts have been continued during the year 1937 for a more adequate food and drug law. Senate bill 5 passed the Senate in March, and at the close of the year was pending before the House Committee on Inter-State and Foreign Commerce. Other food and drug bills have been introduced in both the Senate and the House. Efforts will be continued until a measure fully adequate to consumer protection has been enacted.

(W. G. CA.)

**Drunkenness:** see INTOXICATION, ALCOHOLIC.

**Dry Farming.** The type of agriculture known as dry farming, developed to conserve moisture for crops in subhumid regions of about 15 to 20 inches of rainfall annually, has become an effort not merely to save moisture, but to conserve the population in the U.S. Great Plains area. At the beginning of 1937 this region had a population of 5,877,000 less than that of 1910 and 235,000 below that of 1935, owing to repeated droughts since 1930. Up to 1938 the Soil Conservation Service of the U.S. Department of Agriculture had instituted strip-cropping on 1,000,000 ac., and other improved, dry farming practices in its far-reaching program to rehabilitate and stabilize dust-blown farms and ranches. Strip-cropping is a method of planting alternate, narrow strips of soil-binding crops, such as grain sorghums, between narrow strips of ordinary field crops, such as wheat. Even the method of harvest is made to provide protection against wind and water erosion, for in severely eroded areas only the heads of the sorghums or other grains are harvested and the entire stalk is left standing as a windbreak. In districts of less severe erosion shorter stubble of eight to twelve inches suffices. The old type of dry-farm listing is being replaced with basin-listing, which is more effective in preserving moisture and preventing erosion. At Delhart, Texas, once called the "Heart of the Dust Bowl," the Conservation Service made a demonstration project of 28,765 ac., of which 25,025 ac. have now been stabilized against wind erosion. Many other demonstration projects are being carried on throughout the Great Plains and effort is being made to restore native, soil-binding grasses to a great part of the area and adjust livestock farming to conditions. (See also SOIL EROSION AND SOIL CONSERVATION.)

(S. O. R.)



**Dry Ice:** see CHEMISTRY, APPLIED.

**Dust Storms** may or may not represent land damage, according to their source. In inhabited regions, they are likely to be the manifestations of soil erosion by wind on agricultural land. In generally uninhabited regions, such as deserts and scab lands, the dust storms may represent only the aerial redistribution of soil particles from one locality to another, without any particular attendant damage. Wherever they occur dust storms are a symbol of aridity and a corollary of drought, for dry, powdery soil or sand is a prerequisite of a dust storm.

In arid or semi-arid agricultural regions, such storms tend to follow the removal of vegetation which normally protects and ties down the soil. In desert regions and other areas of arid climate and scant vegetation, the storms are virtually seasonal occurrences. In regions of either type, however, they vary with the velocity of the wind and the intensity of drought. Thus, a combination of unprotected dry soil, wind, and prolonged aridity normally may be expected to produce a dust storm.

In the prairie provinces of Canada dust storms in the spring of 1937 were among the first visible symbols of concurrent drought and cultivation. At intervals, the storms continued into the summer, and at times attained a velocity of 50 miles per hour.

The Northern Great Plains of the United States were subjected in 1937 to some of the worst dust storms in the history of the region. On May 28, visibility in parts of Montana was reduced to less than 50 feet and wind velocity reached gale proportions. From the first of January to the first of October the State experienced local or general dust storms on 68 days. In North Dakota 399 dust storms occurred in 40 days from February to September inclusive, while 72 days of dust blowing were reported in South Dakota from January to September, inclusive. In the Southern Great Plains region of the United States, at Goodwell, Okla., 102 dust storms were recorded during the year ending June 30, 1937.

Yellow-coloured dust storms were again a fairly common occurrence in the drought areas of China, as were the dust and sand storms blowing from the Mongolian desert.

Rains shortly after the middle of January in Australia ended a prolonged drought and stifled the seasonal dust storms. On the continent of Australia, dust storms are characteristically red in colour and originate for the most part on pasture and range land rather than on cultivated land.

The northern half of the Anglo-Egyptian Sudan, the Sahara and other arid or desert regions of Africa again experienced severe sand and dust storms, though these were not unexpected, since such storms have become periodic in these regions.

In other parts of the world less severe and less frequent dust storms were reported, their intensity and frequency varying with the intensity of drought and the degree of agricultural activity. Length of agricultural occupation is almost invariably a determining factor in the potentiality of dust storms in a given drought region. (See also AGRICULTURE: *Drought and the Dust Bowl*; DROUGHT; DRY FARMING.)

(H. H. BE.)

**Dutch Borneo:** see BORNEO.

**Dutch East Indies,** the largest colonial possession of the Netherlands, consists of a huge archipelago, with several large islands, Java, Sumatra, Celebes, parts of Borneo and New Guinea, and many smaller ones, lying along the Equator from 6° north latitude to 10° south latitude, located south of the Philippines, south and east of the Malay peninsula and north of Australia. Capital, Batavia; governor-general, Jonkheer Dr. A. W. L. Tjarda van Starkenborch-Stachouwer, appointed 1936. Area is 733,681 sq.mi.; population (1930) 60,731,-

025; estimate Jan. 1938, 65,000,000. The population (census, 1930) is divided as follows: Java and Madura, 41,719,524; Sumatra, 8,238,570; Borneo, 2,194,533; Celebes, 4,226,586; rest of the archipelago, 4,351,812. Largest cities: Batavia, 437,000; Surabaya, 313,000; Bandung, 167,000.

**History.**—Dutch rule in the East Indies had its origin in the trade activities of the United East India Company, which began in the 17th century. Although the purposes of this organization were commercial it acquired a substantial grip on many coastal districts as a result of wars and negotiations with local rulers. The bankruptcy of the East India Company in 1798 led to the taking over of the administration by the Netherlands Government. The authority of the Government was gradually established over the entire vast archipelago during the 19th century. At the present time laws are promulgated by the governor-general with the consent of the Volksraad (legislative assembly), which consists of sixty members and a president. The latter and half of the members are Dutchmen; the other members are representatives of the native population. While the more populous and developed islands are administered directly, the system of indirect government, with Dutch advisers appointed to native potentates is widely employed in the so-called outer islands, such as Borneo, Celebes and New Guinea.

**Trade and Communications.**—The trade of the Dutch East Indies in 1936 was valued at 551,560,000 florins for exports and 281,874,000 for imports. There were 4,416 miles of railways, 3,368 in Java and 1,019 in Sumatra and at the end of 1930 there were 35,900 miles of highways. Commercial aviation, which began in 1924 with an experimental flight between Batavia and Amsterdam, has expanded until aeroplanes travel more than 500,000 miles annually (in 1936) and carry more than 14,000 passengers, 50,000 pounds of mail and 150,000 pounds of freight. The Dutch East Indies, especially Java, is rich in natural resources and has been intensively and efficiently developed. Among the main products are sugar, petroleum, tin, rubber, pepper, quinine, oil palms, tea and coffee. The sugar industry has experienced a serious crisis because of the growth of nationalist economic measures; output declined from 2,843,000 tons in 1930–31 to 625,000 tons in 1935–36 as a result of Government restrictive measures.

**Finances and Banking.**—The unit of currency is the Dutch florin (55.6 American cents in 1937). The Java bank is the bank of note issue for the Dutch East Indies and there are several other banking institutions. Revenue in 1937 was estimated at 437,125,343 florins and expenditure at 461,564,145 florins.

**Education and Religion.**—The great majority of the natives of the Dutch East Indies are of Malay stock and profess the Mohammedan religion. The total number of schools carried on in native languages in 1928 was 17,611, attended by 1,513,085 pupils. There were 786 Dutch language schools, with 146,275 pupils (37,599 Europeans, 81,281 natives, and 27,395 foreign orientals—mostly Chinese). In Java and Madura (1920) 6.5% of native males and 0.5% of native females could read and write. A colonial army of about 40,000, mostly natives with Dutch in the higher commanding posts, is maintained.

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**Dutch Guiana:** see SURINAM.

**Dutch Literature.** For Holland, 1937 was the Vondel year, in which was commemorated the 350th anniversary of the great poet's birth. In Holland and in the Dutch Indies his plays were produced, his poems recited, and his memory appropriately celebrated. Feb. 1937 marked the 50th anniversary of the death of Dekker ("Multatuli"), the



18th century writer, a study of whom has been brought out by Dr. Julius Pée. Holland lost two prominent literary men during the year 1937; Albert Verwey, poet and critic; and Slaverhoff, poet of the sea.

The year saw the publication of about 300 novels, 300 translated novels, 70 volumes of poetry, 50 plays, and more than 200 children's books.

Among the numerous poems, the following may be cited: Bloem's *De Nederlaag*, van Genderen-Stort's *Rym proeven*, Verhoeven's *Maskers*, de Vries' *Nergal*, Engelman's *Het Bezegelde Hart*, Hélène Swarth's *Wijding*, van Duinker's *Hart van Brabant*, Gerhardt's *Laagland*, de Mérode's *Ruischende Bamboe*, van Oosten's *Glorie des Harten*, and Japiks' Frisian poems. There have been anthologies collected by Dirk Cosler (the child in poetry), by de Groot (Christmas poetry), by Gysen (Flemish poems), and by de Molenaar (anthology of world poetry).

Essays and criticism have not appeared except in periodicals, apart from collected essays by Greshoff, entitled *Rebuten*, and Verumeus Bruning's *Ik Zie, Ik Zie, Wat Gij niet ziet*, a delightfully written book about Dutch ancient monuments.

In fiction, two historical novels should be mentioned: van Praag's *Minnares in Ongenade* and van Zeggelen's *Een hofdame uit de 18<sup>e</sup> eeuw*. Bordewijk wrote *Wingerdrant*, Vestdijk *Het Vijfde Zegel*, Fenna de Meyier *Doolhof*, and A. M. de Jong *Het Cose gerucht*. Anne de Vries had a delightful children's book in *Bartje*. Van Randwyk considered unemployment in *Burgers in Vood*, Servaes' *Sonja* centres on prison life, and Schröder's *Studentencocktail* deals with students' life. There were novels about doctors, life in the country, the film world, life at sea, (cf. in this category, Hertog's *De wilde schuit* and de Geus' *De wilde vaart*), and regional life (cf. Coolen's *Kerstmis in de Kempen* and Theun de Vries' *Stiefmoeder Aarde*). There were no war novels. Louis de Bourbon published *Vrouwen*, a good collection of short stories. The poet Marsman brought out a novel, *De Dood van Angèle Degroux*. Helman's *Aansluiting gemist* deals with the present situation in Spain. Du Perron wrote about Java in *Het Land van Herkomst*. Periodical literature was vitally alive. The reviews number about 1,000. (S. L. EN.)

## EAMES, Wilberforce

(1855–1937), bibliographer of the New York public library, was born in Newark, N.J., Oct. 12, 1855. While still young, he displayed an

exceptional interest in books which won the attention of scholars despite his brief scholastic training. Beginning his library work in 1885, he secured a reputation as America's leading bibliographer. His work involved study of many rare tongues and included innumerable bibliographical studies. Appointed librarian of the New York public library in 1892, he became bibliographer in 1916, holding



LAST PICTURE of Amelia Earhart and her navigator, Frederick J. Noonan, taken at Batavia, Java, and radioed to the United States just before their plane was lost in the Pacific



PLANE in which Amelia Earhart and Frederick J. Noonan were lost in the Pacific while trying to reach Howland island in an around-the-world flight

the post until his death in New York city on Dec. 6, 1937.

## Earhart, Amelia

(1898–1937), American aviatrix, who was lost in the Pacific ocean during a round-the-world flight starting from Miami on June 1, 1937. Despite an extensive search by army and navy searchers, no trace was found of the flyer or her plane. Born July 24, 1898, she had successively been a nurse in Canada during the World War, a research worker, social worker, flyer, editor, and lecturer. She established the following aviation records—first woman to fly the Atlantic, to fly the Atlantic alone, to fly an autogiro, to cross the United States in an autogiro, to fly non-stop across the United States, to fly from Hawaii to the United States. In 1931, she had married the publisher, George Palmer Putnam.

**Earthquakes:** see SEISMOLOGY.

**Eastern Island:** see MIDWAY ISLANDS.

## Eastern Orthodox Churches.

In the Near East in 1937, the number of Orthodox Churches was increased to 13 by the establishment of the Church of Albania, which had hitherto formed part of the Oecumenical Patriarchate; its primatial see is Tirana.

The appointment of an archbishop of Cyprus has not been possible, owing to the deadlock between the Government and the Cypriote Church which has existed since the death of the last archbishop in 1933.

The exact position of the Church in Russia cannot be ascertained, but repression by the Soviet régime is reported to be lessened. The Metropolitan Sergei, who has acted as *locum tenens* of the Patriarchal Throne since the death of the last Patriarch in 1925, has been canonically appointed Metropolitan of Moscow. The Russian Church in Exile has lost by death the Metropolitan Antony of Kiev, who was notable as a religious reformer in Russia before the World War; the Metropolitan Anastasy has succeeded him as president of the Council of Russian bishops.

Under the leadership of the Patriarch Miron, a vigorous evangelistic campaign has been sustained throughout Rumania and especially in Bucharest; similar work, carried on for some years by "Zoe," a lay and clerical society, has had much success.

In Yugoslavia, the opposition by the Orthodox Church to the Concordat concluded between the Government and the Vatican in 1935 led to a serious political position. On July 23, 1937, the bill ratifying the Concordat was passed by the Skupština; on the 24th, the Orthodox Patriarch Varnava died suddenly in Belgrade; and on the 25th, the bishops excommunicated the premier and all ministers and members who had voted for the ratification. In



August the Croats, the chief Yugoslavian Catholic group, themselves rejected the Concordat, and two months later the situation was eased by its being indefinitely postponed.

During 1937, delegates approved by all the Orthodox Churches (excluding the Russian Patriarchate) took part in the World Conferences at Oxford and Edinburgh. The close relations between the Orthodox and the Anglican communions has been strengthened, especially by the exchange of students arranged by the Church of England Council on Foreign Relations. It is noteworthy that Anglican students sent to Rumania have been admitted to sacramental communion by the Rumanian Church.

**East Prussia**, a province of Prussia and the German Reich lying south of the Baltic between the Vistula and Niemen rivers. Area, 14,283 square miles. Pop. (1933) 2,333,301, density 163 per square mile. By the Treaty of Versailles in 1919 East Prussia was cut off from the rest of Germany by the intervening so-called Polish Corridor. This has caused much friction between Germany and Poland; the Germans complain that the Polish railways do not furnish adequate and satisfactory transit facilities across the Corridor; the Poles have complained at times that they have not been properly paid for hauling German trains. To improve communications Germany has placed excellent new steamers in service between Stettin, Danzig and the East Prussian capital of Königsberg. Here in Königsberg is held an annual eastern fair at which some foreign nations exhibit; it also serves as an economic link between East Prussia and Germany and a good opportunity for displaying the products of the German four-year plan.

East Prussia is a region of great landed estates, owned and operated by the landed aristocracy known as Junkers. It was a constant demand of the Socialist and Catholic parties after the war that these estates should be broken up into small farms for the German unemployed. President von Hindenburg, himself the owner of a large East Prussian estate, steadily refused to approve this desirable agrarian reform, and thereby contributed to the downfall of the Brüning, Papen and Schleicher cabinets. This reform was part also of Hitler's program, but the Nazis have done little to carry it out. The Nazi district leader of East Prussia, Erich Koch, aims to establish industries in East Prussia, and so bring about a more healthy balance between agriculture and industry.

(S. B. F.)

**Eclipse:** see ASTRONOMY: *Solar System*.

**Economic Association, American:** see AMERICAN ECONOMIC ASSOCIATION.

**Ecuador**, a South American republic situated astride the Equator on the Pacific; language, Spanish; capital, Quito; provisional president, Alberto Enríquez. The area, including the Galápagos islands (2,400 sq.mi.), is 337,392 sq.mi., according to Ecuadorian claims, but approximately 100,000 sq.mi. is disputed with Peru (see PERU). The population was officially estimated at 2,554,744 in 1932, but more reliable later estimates give 3,414,106 in 1935. The chief cities and estimated populations in 1932 are: Quito, 140,000; Guayaquil, 120,000; Cuenca, 42,000; Riobamba, 21,200.

**History.**—Under the government of a junta headed by Federico Páez, which came into power in 1935, Ecuador has attempted an extensive program of reforms. The budget for 1937 was the largest in many years, with heavy outlays for national defence, public education, and public works and communication. Special efforts were made to advertise the country and to attract tourists. On Aug. 10, a constituent assembly met to consider needed reforms of the Constitution of 1906. This assembly formally named

Páez provisional president of the country and began consideration of constitutional changes. Meanwhile, the Government sternly repressed adverse criticism, closing newspapers and refusing to permit exiles to return to the country. As internal unrest continued, President Páez was compelled to resign (Oct. 24) and was succeeded by War Minister Alberto Enríquez. President Enríquez promptly dissolved the constituent assembly and announced a formal investigation of governmental affairs and the purge of those who had "abused power." The feature of Ecuadorian foreign relations in 1937 was the attempt under the auspices of the United States to adjust the century-old boundary dispute with Peru.

**Trade and Communication.**—Ecuador has external communication by sea (almost entirely through Guayaquil) and north and south by air. In 1937, preparations were made for the opening of air service to all sections of the country. Ecuador has about 600 mi. of railroad. In September contracts were let for an eight-year program of highway development, under which 15 trunk highways are to be built. Imports in 1935 totalled 97,094,000 sucres in value, exports, 113,498,000; in the first ten months of 1936, they were, respectively, 114,792,006 sucres and 87,650,016 sucres. The leading items of import are textiles, machinery, electric machinery and implements, motor vehicles and accessories; the leading exports are: cacao, ores and gold dust, crude oil, and coffee. The United States leads in exporting to Ecuador, supplying 28.9% in 1935 (with Japan 17.6%, Germany 14.1% and Great Britain 12.7% next in order) and in imports, taking 46.6%. United States trade with Ecuador for 1936-37 showed a 16% increase. Negotiations for tariff reciprocity with the United States were begun in 1937.

**Finances and Banking.**—The monetary unit is the sucre whose international exchange value sharply declined to 7.2 (U.S.) by the close of 1937. The budget for 1937 calculated expenditures and revenues at 79,500,000 sucres.

**Education.**—In 1935 Ecuador had 2,239 elementary schools, 21 secondary schools, and four universities, with elementary and secondary enrolments of 181,638 and 5,589. For 1936 the budget allotment for education was \$1,573,675; for 1937, \$1,645,270 out of \$8,745,000, more than ever before allotted. The army has approximately 6,000 men, the navy 500 men. (L. W. BE.)

**Eden, (Robert) Anthony** (1897— ), British secretary of State for foreign affairs, second son of Sir Wm. Eden, Bt., was educated at Eton and Christ Church, Oxford. After service in the World War (1915-19), he contested the Spennymoor division in 1922, and in the following year was elected for Warwick and Leamington, which he has since continued to represent. From being parliamentary private secretary to Sir Austen Chamberlain (1926-29), he became under-secretary for foreign affairs, and in 1934 was made lord privy seal and a privy councillor. In June 1935, he entered the cabinet as minister for League of Nations affairs, holding this post until the following December, when he succeeded Sir Samuel Hoare at the foreign office. In Jan. 1937 he concluded the "gentlemen's agreement" with Count Ciano, the Italian foreign minister concerning the situation in the Mediterranean. At Geneva, in May, he welcomed Egypt into the League of Nations, and in the same month sat with representatives of the Dominions, who came to London for the Imperial Conference. At Geneva again in September, he delivered an important pronouncement on Palestine, and took part in a world-wide broadcast by leading European and American statesmen on world economic co-operation organized by the American National Peace Conference. Later in the month Mr. Eden represented his country at the Nyon Conference, convened by Great Britain and France to discuss



the attacks (arising out of the Spanish civil war) on merchant shipping in the Mediterranean.

In November Mr. Eden represented Great Britain at the Nine-Powers Conference (*q.v.*) on the Japanese attack upon China. At the end of the same month, together with Mr. Chamberlain, he met in London and came to a cordial agreement with Messrs. Delbos and Chautemps on the situation in Spain, Germany's demand for colonies, and other matters.

**Education.** Significant developments in education in the United States in 1937 include the rapid rise of enrolments in secondary schools; increase in enrolments in the colleges and universities; substantial increases in State appropriations for education and in Federal appropriations for the Land Grant colleges and for vocational education; the large number of school and college buildings erected through aid from the Public Works Administration of the Federal Government; and the promotion of adult education, through the Works Progress Administration of the Federal Government, including a variety of courses in art, music, the drama, and other subjects. Other developments that should be noted are the persisting decrease in enrolments in elementary schools in proportion to the general population of the United States; the continued use of the radio in adult education; the extension of radio educational broadcasts; and the advancement of standards in the pre-service preparation of teachers. Several States during the past year began to require for teachers a minimum of four years beyond high school graduation. About a dozen of the States and the District of Columbia have established such standards for licences to teach in both elementary and secondary schools. The "Forum Movement" gained considerable headway during the year, in large part through the energetic leadership of Dr. John W. Studebaker, the United States commissioner of education. Almost numberless books and much periodical literature appeared on various educational subjects during the year.

**The Educational Policies Commission.**—The work of the Educational Policies Commission was significant. This commission, created in 1936 and composed of more than a score of distinguished American educators, appointed by the National Education Association and the Department of Superintendence (now the American Association of School Administrators), seeks to take a comprehensive view of American life to determine the essential responsibilities of education, and to state how these responsibilities can best be met. The commission has been engaged in considerable research and has published important documents, among which are *The Unique Function of Education in American Democracy*, prepared in collaboration with Dr. Charles A. Beard and *Research Memorandum on Education in the Depression*, prepared by Dr. F. B. Sears. Other important publications are soon to appear. It is the belief of the commission that its work will be effective in proportion to the degree to which the educational profession in the United States is brought into the task of formulating pronouncements and securing their practical acceptance. Assisting the commission as consultants *ex-officio* are 2,200 officials of educational and regional organizations, who constitute an effective co-ordination between the profession and the public.

During the year the non-professional graduate schools of Harvard, Yale, Princeton, and Columbia began a co-operative experiment in examinations for the purpose of gaining an estimate of the academic achievements of entering graduate students in the more important fields of learning. This experimental step was not designed to effect the membership of students in these graduate schools but to determine the value of carefully prepared questions (of the short-answer or objective type) as aids to the students and to their advisers and teachers in regard to the

aptitude and the preparation of the students for graduate work in the non-professional schools. The examinations were the same in all the four institutions, except for options in language. The experiment is regarded by some observers as an important development in higher education.

Important during the year was the experiment of the Progressive Education Association through its commission on the relation of school and college. This commission, composed of school and college representatives concerned with the problem of this relation, was formed seven years ago to study changes which seemed to be most needed and to develop co-operation in an effort to make the work of both the schools and the colleges more meaningful to the students in each. In 1937 the work of the commission was developing in at least five general directions; greater continuity in the curricula; better integration of the subject matter; more satisfactory adaptation of the work of the schools to individual capacities, needs, and interests; more vital subject matter; and more extensive use of the communities in which the schools are located.

**Secondary Education.**—Also important was the co-operative study of secondary school standards which is directed through representatives of the six regional associations of secondary schools and colleges in the United States. The purpose of this study, which made considerable progress in 1937, is to make more vital and less mechanical accreditation procedures, to make them more stimulating, more adaptable to the individual differences of students, and more broadly comprehensive and less narrowly academic. Much experimentation was made in an effort to apply and validate criteria and procedures in many representative secondary schools in all parts of the country. In process now is the work of analysis and evaluation of the results of experimental materials, to be followed by a report containing recommendations for programs of the various regional associations.

Interest in the problems of secondary education in the United States was especially revealed in 1937 in the wide discussion of the report of the committee on orientation of the department of secondary school principals of the National Education Association, entitled "Issues in Secondary Education," which was issued in 1936. This report is considered a significant contribution to educational philosophy and highly important in the development of secondary education. The report grew out of the beliefs (1) that the full realization of democracy in the United States required greater effectiveness in secondary education; and (2) that this effectiveness should be made through a program of secondary education more closely related to the realities and problems of modern American life.

**Proposed Federal Aid.**—An interesting development in education during the year was the increased and increasing interest in Federal aid for general education in the various States. This proposal, which has been widely discussed in this country for many years, at present appears in what is known as the Harrison-Black-Fletcher bill, now before Congress. It provides for an initial appropriation of \$100,000,000 and an annual increase in the sum of \$50,000,000 until the appropriation reaches \$300,000,000 in the fifth year, that appropriation to continue annually thereafter. The money is to be used by the States for the promotion of a program of public education, the manner in which it is to be used to be left to the various State legislatures. Control or supervision of State schools or State school systems by the National Government is expressly prohibited in the bill. Under its provisions a State, in order to participate in the Federal allotments, must maintain its school system for at least 160 days during each year, except when suspended because of epidemics, fires, or "acts of God"; and it must spend annually from public revenues, State or local or both, as much per child between the



ages of five and 20 years as was spent in 1934. The bill provides that the distribution of the annual allotment for each State is to be in proportion to the population between those ages, based on the census reports, and without discrimination. Advocates of the bill are hopeful for its early passage.

In June of 1936 President Roosevelt appointed an Advisory Committee of 18 people to study the subject of Federal aid to vocational education. This committee was enlarged to 23 in June of 1937 and instructed to study the broader questions of Federal relationships to all kinds of education in the United States, the report to be made before the end of the year. Educational leaders throughout the country viewed the news of President Roosevelt's action as evidence that their efforts to gain Federal aid for schools had enlisted his interest in the subject.

**Horace Mann Day.**—Of wide interest in the United States this year was the celebration of the 100th anniversary of the establishment of the secretaryship of the Massachusetts Board of Education. This centennial, observed in numerous places throughout the country, has served to draw fresh attention to the work and influence of Horace Mann, who is regarded as the father of public school education in the United States. The period from Nov. 7 to Nov. 13, designated as "American Education Week," witnessed the climax of this year-long observance, with Nov. 9 as "Horace Mann Day." Thousands of citizens honoured his memory and read the story of his work for public schools.

A radical departure in higher education appeared in an experiment announced this year at St. John's college, Annapolis, Md. The new program of study at that institution is not a college "course," as that word is ordinarily used in the United States. Nor is it a group or number of courses, either required or elective. An entering student may take either the old or the new program, which is a complete and integrated curriculum that extends over four years. Once selected, however, the student will be required to take the new program in its entirety. Comprehensive and general, this is designed to afford ample opportunity for the individual interests and capacities of the students and to lead to the degree of Bachelor of Arts. The program, opened to freshmen who entered the institution in the autumn of 1937, is based on a hundred or more "great" books of the intellectual tradition of the western world. Columbia college in New York city announced during the year a general course in the humanities to be required of students in that institution. Apparently the tendency generally in the United States is toward more general rather than specialized education, in higher institutions. Interest continued also during the year in the reconstruction of the curricula in elementary and secondary schools, with numerous books and considerable periodical literature appearing on the subject.

The Southern Association of colleges and secondary schools created a Commission on Curricular Problems and Research to plan and direct a study of the secondary schools and colleges that are members of the Association. The study, in part similar to that of the Progressive Education Association and other regional organizations, is designed to develop an educational program that will more adequately meet the needs of adolescent youth in the Southern section of the United States. This experiment was approved as an enterprise of the Association in 1937, and will probably continue for five years or longer. Under the experiment secondary schools and colleges will be encouraged to modify their present instructional programs so as to provide for desirable outcomes that are not now being achieved by the secondary schools.

Public pronouncements by President Robert M. Hutchins, of the University of Chicago, during the past few years, particularly *The Higher Learning in America*, which appeared in 1936, led during 1937 to wide discussions of conditions in higher education and drew lively attention to the growing movement to reorganize

undergraduate materials and methods of instruction. Many reviews and critiques appeared on this issue.

A significant development in education in the United States during the past year has been the work of the American Youth Commission of the American Council on Education. This commission, formed two years ago but with most of its active work to date done in 1937, gave much attention to the problem of the vocational adjustment of youth and the responsibility of school and the public employment agencies and employers of labour and labour itself in dealing with these problems. At its meeting in October the commission approved a large plan of experimentation between the schools and the United States Employment Service. (See SECONDARY EDUCATION.)

**BIBLIOGRAPHY:** *Journal of the National Education Association of the United States for 1937* (monthly except June, July and August). Various publications for the Office of Education, United States Department of the Interior. (E. W. K.)

**British Empire.**—Besides being a federation of countries for utilitarian purposes, the British Commonwealth of Nations has its basis in the unity of descent and of cultural and historical traditions. In education the same traditions which moulded the systems of England and Scotland were at work in all the English-speaking Dominions. The interplay of religious and secularist factors, the rivalry between voluntary effort and State intervention ran on similar lines, but the difference in territorial distribution, the relative importance of Catholic, Anglican, or Puritan influences and the presence of the problem of bilingualism tended to differentiate the systems. Gradually the Dominions have developed their own traditions more in keeping with their needs. At first sight there may seem little in common between the centralized and secular system of Australia and decentralized and partly denominational system of Canada; or between Catholic Quebec and Calvinist South Africa. Yet the basic principles of their educational systems are similar. The belief in the democratic principle of equality of educational opportunities and in tolerance towards political and religious dissenters is common to all. After the War, this community of ideas became more consciously recognized. The appearance of new post-War political philosophies challenged the democratic traditions of the British Commonwealth and led its members to revise their educational systems and to plan them more systematically, so that a common British philosophy of education is gradually emerging through the mutual influence of Great Britain and the Dominions.

To bring out this community of purpose, a mutual recognition is enough. Lately the collaboration of the members of the Commonwealth in educational reform has become more pronounced. The Hadow report of 1926 has influenced the Dominions, and new democratic societies outside of England have changed the attitude of England. The development of the London Day Training college into the Institute of Education as the educational clearing house of the Commonwealth and the collaboration of the Dominions in the *Year-Book of Education* started by Lord Eustace Percy in 1932 are visible signs of this new tendency.

During the past years all the members of the Commonwealth were more active in the revision of their programs and reorganization of their school systems. There is a common tendency to rebuild the systems on horizontal lines with three stages: primary, intermediate, and secondary, which would roughly correspond to the psychological stages of growth. The traditional conception of secondary education as a preparatory step to academic professions gives way to a more comprehensive view, which includes technical and vocational education as well. Indeed, the division into general and technical education is considered to be obsolete and the new programs try to bridge the traditional gulf.

For administration and finance the extreme decentralization and



Number of British Empire Pupils in 1935-36

	Population 5-20 years in 000	No. of pupils in primary schools	No. of pupils in secondary schools	No. of pupils in vocational schools	No. of pupils in private schools	No. of students in uni- versities and colleges	Per cent. of all pupils to 2
Canada . . . . .	3,250	1,816,094	301,659	included in second	100,200	93,234	71
Australia . . . . .	1,866	880,871	137,842	"	243,196	10,594	68
New Zealand . . . . .	399	208,815	20,215	18,156	33,387	4,967	71
South Africa (Europeans) . . . . .	584	320,956	48,283	24,424	23,737	7,892	73
Ireland (Eire) . . . . .	860	489,007	35,111	64,243	no inf.	5,504	69
British India . . . . .	97,740	11,065,007	1,388,141	257,276	686,109	111,808	14
England . . . . .	9,594	5,308,271	463,906	1,106,551	300,000	80,000	76
Scotland . . . . .	1,213	603,761	148,577	160,944	10,000	19,000	78
N. Ireland . . . . .	344	200,607	10,866	23,000	3,000	1,580	70

one-teacher schools are gradually superseded by the organization of rural districts into larger units and consolidation of small schools. The methods are also reformed, and the ideas of the "active school" and individual approach are gaining ground.

**Canada.**—In Alberta, the most important features of the past two years were: (a) the introduction of the new enterprise or activity system of education in the elementary schools, (b) the beginning of an "intermediate school" organization, and (c) the reorganization of the administrative rural units into larger groups of schools called "divisions." More than 800 one-school districts have been consolidated.

In New Brunswick, the first minister of education was appointed in 1936. Since 1932, the problem of consolidating the rural districts was in the fore-front. The superintendent in his last report (1937) recommends a less rigid and more elastic course of study, with fewer compulsory and more elective subjects.

In Nova Scotia, the new programs for the Junior high school were introduced in 1935. New programs for the Senior high school are also being gradually adopted. New subjects, including music, art, manual work, commerce, and industry were admitted as valid for the Provincial high school certificate.

**Australia.**—In New South Wales, legislation is being prepared for the reform of technical and general post-primary education.

The Australian Council for Educational Research, founded in 1929, arranged an international conference in 1937 under the auspices of the New Education Fellowship. In May 1937, the meeting of Australian ministers and directors of education passed a resolution in favour of raising the school age to 15 years to operate from 1940.

**New Zealand.**—During the years of depression, the lower limit of school-age was raised to six years. One of the measures of the new Government in 1936 was the re-admission of five-year-olds to public schools. The Government has decided to raise the school age to 15 years.

In *Transvaal*, a commission was appointed in 1936 to investigate the system of the province. The conference at Pretoria in 1936 approved the principle of centralization of rural schools and in 1937 the schemes were in operation in 12 areas. In each a central school with hostels is to be established. Special school farms were opened by the department.

In the Orange Free State, the raising of the limit of compulsory attendance to 16 years was recommended by the director in 1937.

**Ireland (Eire).**—The gradual introduction of Irish as the medium of instruction is continuing, and at present more than half the secondary schools and almost all primary schools use Irish. Apart from this reform, important changes indicate the general reconstruction of the school system. Small rural schools are being eliminated through amalgamation, the curriculum of secondary schools is losing its previous rigidity with the introduction of new selective subjects. In primary schools the introduction of rural science as an optional subject is also a sign of the general tendency.

**British India.**—The most important problems of education in India are the wastage and stagnation in primary schools and the overcrowding of secondary and higher education. As the last *Report on Education in India* (1936) points out, only 26% of boys attending primary schools attain literacy.

The two British experts (A. Abbott and S. M. Wood), invited by the Indian Government, published their report in 1937; among their suggestions were the following: (a) infant classes should be entrusted to trained women teachers, (b) the education in primary schools should be based more upon the natural interests and activities of young children, (c) the curriculum of the rural middle schools should be closely related to the children's environment, (d) the vernacular languages should be the medium of instruction throughout the secondary stage, (e) manual work should be part of the curriculum of every school. The necessity of these reforms is generally recognized, and in Punjab rural science was introduced in vernacular. Middle schools and some schools have taken up petty crafts and industries, floriculture and tree-planting. With the exception of Punjab and United Provinces the middle schools of India are as a rule English-speaking. The introduction of compulsory attendance is proceeding slowly, and in Madras 71% boys and 28% girls of school age (6-11) attend schools. For British India as a whole, the percentages are only 50 and 17 respectively.

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(N. HA.)

**The World.**—The world movement for improved physical education and training for the young, the adolescent, and the adult has been far and away the most conspicuous and significant trend in general education of recent years. Though it is indeed a world movement, having, for weal or woe, political significance and momentum, and though it is but a particular phase of a universal youth movement, it has in each country its own characteristics. A nation, in short, must not only educate its children; it must educate itself. In Germany, Russia, and Italy, the movement has been centralized, subsidized, and controlled by State or semi-State agencies, so that in those countries the Scout movement has been either eclipsed or transformed or absorbed, and a decided check has been given to religious associations of youth for purposes of physical and moral education particularly in Germany and Italy. Even in the Far East, in China and Japan this emphasis on organized physical education is a central feature of national educational policy, and it is illustrated no less in Africa and particularly in the recent report on native education in East Africa.

Peculiar to German education, but spreading throughout the Continental countries and with its advocates in America and Britain is the associated system of youth labour camps. That education must be less academic and more practical, less superficially cultural, and more serviceably efficient and utilitarian, more civic and less private and personal, is the keynote everywhere, although in the democratic countries, there is ceaseless vigilance to maintain the cause of individuality and freedom in education. In every direction this enlarged corporate view of education is manifest in the extraordinary growth of school camps, journeys and cruises.

Such a rejuvenation and rehabilitation of education calls for



the overhaul of its methods of educational assessment, and at the present time every aspect of the examination system is under critical scrutiny and reorganization. Indeed, universities both in the old world and the new, are at present so preoccupied with problems of physical education and the training of teachers that some apprehension is felt lest their traditional function of the dissemination of higher education, the advancement of learning, and of research be hindered or diverted.

But a more significant feature of world education is the encroachment of the State upon the traditional and original autonomy of the universities. Nowhere is that more acutely expressed and felt than in and under the Central European dictatorships. Personnel has been transformed, studies have been wrested from their proper position as independent forms of truth and inquiry, and indoctrination has permeated the higher learning. Even in the midst of the civil war the head of the Spanish Nationalist State (General Franco) found himself able to create by edict an Institute of Hispanic Studies.

But the characteristic individualism of education among the English-speaking nations has not been seriously challenged by the growth of State assistance and control, and there is every evidence of vigilance on the part of the teaching profession and of local education authorities to maintain the tradition of freedom in education; freedom in technique, in organization, in timetables, in curricula, in methods of discipline. This concern for freedom finds further expression in the increasing activities of parents' associations in the United States and in the extending influences in Britain of such bodies as the P.N.E.U. and the Dalton Association and the Montessori Society. A further indication of the contrast between democratic liberty and freedom in education and continental dictatorship in school and university is to be found in the growth of the library movement. Increasing provision is made for school libraries, for trained librarians, for co-operation between public and school libraries, for exchange facilities between university libraries of different countries. In this development there is further found that international note which is expressed in the growing number of foreign students in residence in universities, colleges, and schools. On the other hand, technical education, while sharing in the general process, still lacks full public recognition and support save in its ancient homes, Germany and Switzerland. At the present time the demand for such education comes rather from the employee than from the employer, and there is a world-wide need for fuller and more sympathetic participation by industry in the sphere of technical education. Nevertheless, vocational guidance is an increasing preoccupation of teachers and administrators, so that on the one hand national governments issue pamphlets on the choice of careers, and on the other hand schools and colleges appoint careers masters or organize appointments bureaus. Their work in America is facilitated by that of vocational guidance clinics and in Britain by the Institute of Industrial Psychology. The authorities in Russia, Sweden, Belgium, France, and Britain make their contribution to this problem in the appointment of professional psychologists, psychiatrists, and social workers: education is thus conceived to be a social service, constructive, cultural, civic, and remedial.

Peculiar to contemporary education is the problem of the falling birth-rate, the effects of which are being felt, in every country at every educational level, and in every type of school or college. It has its counterpart in the growing importance of practical subjects in education and of the plea for education for civic and economic efficiency. Dialectic materialism influences education no less than political and social organization. Can the school save democracy, can democracy save its schools? These are questions asked on both sides of the Atlantic, and the issue at stake

## EDUCATION, SECONDARY—EGGS

in philosophy and education throughout the world is the same, that between a materialistic and a spiritual view of human society and individuality.

For more complete details on education see also ADULT EDUCATION; BACKWARD CHILDREN; ELEMENTARY EDUCATION; GIFTED CHILDREN; SECONDARY EDUCATION; UNIVERSITIES AND COLLEGES; VOCATIONAL EDUCATION, etc. (A. A. C.)

**Education, Secondary:** see SECONDARY EDUCATION.

**Educational Policies Commission:** see EDUCATION.

**Education Association, National:** see NATIONAL EDUCATION ASSOCIATION.

**Edward VIII:** see WINDSOR, EDWARD, H.R.H. THE DUKE OF.

**Edwards, Alfred George** (1848–1937), British divine and first archbishop of Wales born at Llanymawddwy, Nov. 2, 1848. A biographical notice of him appears in the *Encyclopædia Britannica*, Vol. 8, p. 19. His energetic pilotage of the Welsh Church in the early years of its disestablishment achieved such excellent results that the archbishop confessed that the disestablishment had actually proved to be a benefit. He resigned in 1934. In 1927 Dr. Edwards published his *Memories*. He died at St. Asaph, July 22, 1937.

**Eggs.** Production and trade in eggs suffered severe losses during 1937 in both the United States and the United Kingdom, although from widely different causes. In egg-laying trials during 1937 in Great Britain the mortality rate of hens rose to 17.7%, as compared to a death rate of 6.6% in 1926–27. In the U.S. conditions diametrically opposite led to a high egg-laying rate and heavy production that reduced prices from a high of 26¢ a dozen in March to 17¢ in December and caused a loss to dealers in storage eggs estimated at nearly \$10,000,000 by the Chicago Mercantile Exchange, the largest U.S. market for egg contracts.

The Imperial Economic Committee estimated egg production in 1937 in the United Kingdom at around 36,000,000 great hundreds, a further extension of the decline in production that led the Poultry Technical Committee of Great Britain to report in 1936 that the British poultry industry was struggling under an almost impossible handicap of diseased and weak stock. This condition the committee attributed to the fact that during post-war years when prices were very high, the demand for hatching eggs and day-old chicks was so great little or no attention was paid to the quality of the new flocks thus produced. As a result of failure to select eggs from strong breeding stock flocks of little stamina were produced. Tentative proposals for remedying this situation suggest that producers of hatchery eggs and day-old chicks be registered and inspected and imported hatching eggs also regulated. The expense of restoring British flocks to a healthy, profitable state is estimated at about £110,000 annually.

Imports of shell eggs into the United Kingdom in 1937 were 24,732,000 great hundreds, valued at £10,440,000, which was approximately the same number and value of 1936 imports. Eggs not in shell, including both frozen and dried eggs, imported in 1937 were 884,000 cwt., valued at £2,267,000, approximately the same as 1936.

Contrary to predictions the Sino-Japanese conflict has not decreased the importations of Chinese eggs into the U.S. Instead importations from China and other sources increased in 1937, nearly 90% of imported dried eggs coming from China. For the ten months ending Oct. 31, the 1937 U.S. eggs imports were as follows, figures in parentheses being for the same period in 1936:

Whole shell eggs, 494,745 dozen (311,883). Whole dried eggs, 565,919 lbs. (438,675). Whole frozen eggs, 25,412 lbs. Egg yolks



dried, 5,171,908lbs. (4,487,478). Yolks frozen, 1,454,542lbs. (624,780). Albumen dried, 2,690,673lbs. (2,250,736).

One of the larger U.S. meat packing companies announced a newly developed and patented process for producing odorless, unfermented dried egg whites, or albumen. Two plants were opened in egg-producing centres to manufacture the product, which, it is expected, will decrease imports.

Receipts of eggs at the four principal U.S. markets, New York, Chicago, Philadelphia and Boston, in 1937 were 13,537,369 cases of 30 doz. to the case, as compared to 13,319,369 in 1936. In the late winter and early spring of 1937, the period when eggs are packed for storage in the U.S., prices reached as high as 26 $\frac{3}{4}$ ¢ per dozen in March, many dealers buying eggs to store and the Federal Government buying eggs to give to persons on relief and also to stabilize the market. The peak of the volume of eggs in storage is usually about Aug. 1 and on that date there were 3,714,000 cases of shell eggs and 167,111,000lbs. of frozen eggs in storage. Meanwhile egg prices had declined steadily from the March high and continued to decline to the end of the year, the December rate of egg production being one of the highest on record. (See POULTRY.) (S. O. R.)

**Egypt**, an independent kingdom of north-east Africa; bounded N. by the Mediterranean, S. by the Anglo-Egyptian Sudan, N.E. by Palestine, E. by the Red sea, W. by Tripoli and the Sahara. Capital, Cairo; ruler, King Farouk (*q.v.*); flag, green, with a white crescent, having three five-pointed white stars in an equilateral triangle between the horns, which point towards the flagstaff.

**Area and Population.**—Area, c.380,000 sq.mi. (13,500 cultivated); pop. (1937), 15,904,525. Over 90% are Moslems, with some 8% Christians and 0.5% Jews; and the language of the overwhelming majority is Arabic. Education is compulsory between the ages of 7 and 12 at 2,748 "maktabas," attended (1934-5) by 558,628 pupils. There were also, during the same period, 103 other "maktabas," 38 high elementary schools, 158 primary schools, 33 secondary schools, and a State university. Cairo had (1937) a population of 1,307,422; other leading cities (1927 census) are: Alexandria, 573,063; Port Said, 104,603; Tanta, 2,016. (X.)

**History.**—On Jan. 12, Sir Miles Lampson presented his credentials as first ambassador to Egypt, and the British officers holding executive rank in the Egyptian army left the service. On Feb. 2, implementing the provision in this respect in the Anglo-Egyptian Treaty of Alliance, Egypt issued an invitation to the Capitulatory Powers to a conference on the question of the abolition of the Capitulations and the reorganization of the mixed tribunals. This conference opened at Montreux on April 12, and on May 8 a convention was signed abolishing the Capitulatory régime and reorganizing the mixed tribunals (*see* CAPITULATIONS). Pursuant to the special provision in the Anglo-Egyptian Treaty, Egypt, on the recommendation of Great Britain, was admitted to the League of Nations on May 27 at a sitting of the assembly over which His Excellency Rusto Arras, Turkish minister of foreign affairs, presided.

On July 25, His Majesty King Farouk returned from Europe, where he had spent the summer. On the 29th he came of age, the agency council was dissolved, and the King took the oath of fidelity at an extraordinary session of the Egyptian parliament. Two days later, in accordance with custom, the cabinet resigned and the King entrusted the formation of a new one to the outgoing premier, Mustapha Nahas Pasha, who took the opportunity of effecting a reconstruction.

On Nov. 18 King Farouk inaugurated his first parliament. Ten days later an unsuccessful attempt was made on the life of the



FAROUK I enthroned at Cairo July 29 as king of Egypt and Misr, lord of Nubia and the Sudan, and sovereign of Kordofan and Darfur

premier, Mustapha Nahas Pasha, by a young Egyptian, called Abdel Kader Izzeddin. The inquiry showed that he belonged to the "Green-Shirts," an organization of young men hostile to the Wafd, and that he had been in close touch on the spot with Arab leaders in Palestine, Syria, and Iraq. On Dec. 7 His Majesty inaugurated the 15th Ophthalmic Congress, which was attended by delegates from all the world. On Dec. 30, the King dismissed the Nahas cabinet and entrusted the formation of a new ministry to Mohamed Mahmud Pasha, who constituted a cabinet drawn from all parties in the country except the Wafd.

The change in cabinet was due to a disagreement between the King and Nahas Pasha on the question of the interpretation of the Royal prerogatives and the activities of the "Blue-Shirts," a body of young Egyptians organized by the Wafd, whose supreme chief was Nahas Pasha. The trouble really dated back to the coming of age of the King, when the cabinet tried to alter the army oath from allegiance to the King alone to allegiance to the constitution as well. The personal situation of the King was alleviated by the nomination of Aly Maher Pasha as head of the royal cabinet and thus political adviser to His Majesty. To this appointment the cabinet had raised objections, but gave way when the King intimated that he intended to exercise his powers in regard to nominations to his personal staff. The crisis became acute early in December owing to the King's refusal to sign the decree for the nomination of a Wafdist to a vacancy in the Senate.

On Dec. 24 the Wafd Parliamentary Committee, comprising the Wafd majority in both chambers, recorded at a public meeting its confidence in Nahas, and each of its members took an oath of implicit obedience to him. As a last effort to reach a satisfactory solution the King, on Dec. 29, made two alternative suggestions to Nahas Pasha, *viz.* the formation of a coalition cabinet of



all parties, or a commission composed of past and present prime ministers and other high political and legal officers, the verdict of either of which on the questions at issue between palace and cabinet he was prepared to accept. Nahas Pasha rejected the proposal for a coalition cabinet, but accepted arbitration in principle if the commission were composed of jurists and not politicians. Then it was that the King decided to dismiss the cabinet, on the ground that he had in his possession ample proofs that the country did not approve of the methods of this cabinet, which were not in accordance with the spirit of the constitution and restricted public liberty.

**Trade and Communications.**—Egypt had another prosperous year in 1937. The State accounts, closed on April 30, the end of the financial year, showed a surplus of £E.1,311,000. This brought the general reserve up to £E.34,000,000. For the seven months ending Nov. 30, a further increase in revenue of £E.2 millions was recorded, mainly in customs, which produced £E.600,000 more revenue than the corresponding period of the preceding year.

A record cotton crop came on the market in Sept. 1937, viz. 11,140,000 kantars, an increase of 2,000,000 kantars over the previous record. The increase in production more than compensated for the decrease in prices. The area under cultivation was 1,978,000 feddans, representing an increase of 15% over the previous year, and the average yield improved to 5.52 kantars per feddan.

Trade during the year was brisk. For the 11 months ending Nov. 30, imports amounted to £E.34,500,000 and exports to £E.36,160,000, an increase of £E.5,910,000 and £E.8,000,000 over the corresponding period of 1936. Main increases under imports were kerosene £E.420,000, cotton piece-goods £E.700,000, coal £E.720,000; and, under exports, cotton £E.5,900,000, and gold £E.1,000,000. The year again ended with a trade balance in favour of Egypt.

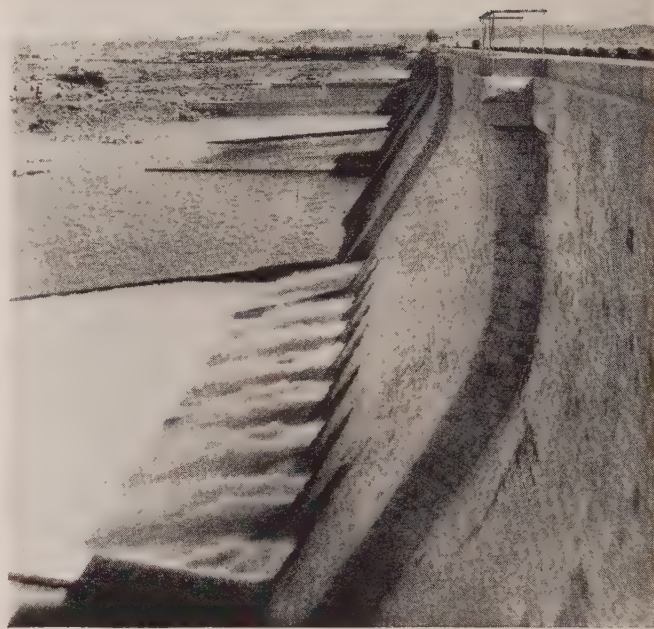
Early in December Sir Thomas Barlow and Mr. James Ainsley visited Egypt as a good-will mission on behalf of the Manchester Chamber of Commerce to investigate the situation from the point of view of Egyptian purchases of British manufactures, particularly textiles. In view of Egypt's favourable trade balance, their investigations were directed to seeing how best this could be used to develop a two-way trade between the two countries.

During the year parliament ratified an agreement with the Suez Canal Company, giving the Egyptian Government an interest in the undertaking and Egyptians a greater part in the administration. (See SUEZ CANAL.)

The development of internal communications has been stimulated by the Anglo-Egyptian treaty. In 1936, there were 2,973 kilometres of standard-gauge, and 1,413 kilometres of narrow-gauge railways; and on May 1, 1937, a fast Diesel railcar service between Cairo and Port Said was instituted. There were, in 1936, 44 mercantile steamships (registered net tonnage 40,505), carrying the Egyptian flag, and 173 sailing vessels (international tonnage 11,662). In March, the all-air service between England and Egypt was inaugurated, and on June 1 the new service was begun from Southampton to Durban via Alexandria and Cairo.

**Finance and Banking.**—The monetary unit is the gold Egyptian pound of 100 piastres (one £E. = c. £1 os. 6½d.). The budget for 1937–38 has been balanced at £E.36,116,500. Revenue is obtained by direct taxation of agricultural land and of houses in the principal towns, and by indirect taxation on all imported and a few exported commodities. The National Bank of Egypt (*Bank Misr*) is an Egyptian corporation owned by its shareholders; but all the other 15 commercial banks are either branches of foreign banks or companies founded mainly with foreign capital.

**Defence.**—In order that she may take her full share of the burden of defence, in accordance with the Treaty of 1936, Egypt



THE ASWAN OR ASSUAN DAM in the Nile Valley of Southern Egypt forms a vast irrigation reservoir on which much of the agricultural production of Egypt depends

is enlarging her army. The British military adviser to the Government, Major-General Marshall-Cornwall, submitted a report in February, acting upon which the Government proposes to increase the army to about 22,000 men during the coming three or four years.

(A. MN.)

**Eire:** see IRISH FREE STATE.

**Elections.** Though it was an off year for national elections, 1937 witnessed several contests in the States, which were eagerly watched by political observers in the hope of gauging public sentiment. No clear drift of opinion, however, was discernible. In the minor general elections held in Michigan (April 5) and Kentucky (Nov. 2) the Democrats made some small gains; and in Virginia, as usual, they elected (Nov. 2) their candidate for governor—James H. Price. In the various referendums of the year, Maine, on Aug. 16, voted down the proposal of a sales tax for old-age assistance; New Hampshire, on March 7, refused assent to the calling of a State constitutional convention; Alabama, on March 10, exchanged its dry law for a dual system of local option and State control of liquor stores; Tennessee (Sept. 23) and Georgia (June 8) chose to remain wholly dry.

More significantly, in their June election, the people of Georgia approved 25 constitutional amendments which were designed to enable the legislature to carry out the social and economic programs of their New Deal governor, Mr. E. D. Rivers. Arkansas on the other hand, in its special election to fill the senatorial vacancy caused by the death of Joseph T. Robinson, elected Representative John E. Miller, an independent Democrat, in preference to the party's regularly nominated and loudly professing New Deal candidate, Governor Carl E. Bailey. In New Jersey a bitterly fought campaign for the governorship resulted on Nov. 2 in the election, by a somewhat doubtful majority, of Senator



A. Harry Moore, conservative machine Democrat, over Lester H. Clee, Republican.

But by far the most interesting and significant election of the year was that held in New York State and more particularly in New York city on Nov. 2. A lively primary campaign, in which Senator Royal S. Copeland with Tammany support sought nomination for mayor on both Democratic and Republican tickets, had culminated on Sept. 16 in his complete elimination and the selection of Jeremiah T. Mahoney by the Democrats and Mayor Fiorello H. La Guardia by the Republicans and Fusionists. Both Mahoney and La Guardia avowed their strong attachment to the New Deal as a national policy. But La Guardia insisted that the election was a local matter, emphasized his record for clean and efficient city government; and it was on that issue that he was elected with a plurality of more than 450,000 votes. Thomas A. Dewey, also running on the Fusion ticket, was chosen for the important office of district attorney for New York county. In the State at large the Republicans were generally successful: strengthening their control over the State Assembly; naming a majority of the delegates to the State constitutional convention (to meet in April 1938); and filling the three vacant Congressional seats.

To one of these vacancies, formerly occupied by a Democrat, they elected Mr. Bruce Barton, writer and advertising man. (See also DEMOCRATIC PARTY; REPUBLICAN PARTY.)

**Schedule of Elections.**—Presidential elections in the United States are uniformly held on the Tuesday after the first Monday in November in years designated by multiples of four. Congressional elections are held on the same or corresponding day in even years by all States except Maine, which adheres to its old custom of holding elections on the second Monday in September. Governors are elected in even years on the same day as members of Congress in 27 States: Arizona, Arkansas, Colorado, Connecticut,

Georgia, Idaho, Iowa, Kansas, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New Mexico, New York, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Wisconsin, and Wyoming. They are elected quadrennially at the same time as the president in 11 States: Delaware, Florida, Illinois, Indiana, Missouri, Montana, Nevada, North Carolina, Utah, Washington, and West Virginia; quadrennially at the congressional elections between presidential years in 4 States: Alabama, California, Maryland, and Pennsylvania; quadrennially on the corresponding day in the years immediately preceding presidential elections in 2 States: Kentucky and Mississippi; quadrennially on the corresponding day in the years immediately following presidential elections in 1 State: Virginia; triennially on the corresponding day (latest election Nov. 2, 1937) in 1 State: New Jersey. Louisiana chooses its governor quadrennially in presidential years on the third Thursday in April; and Maine, biennially at the same time as she selects her Congressmen. (G. P. BA.)

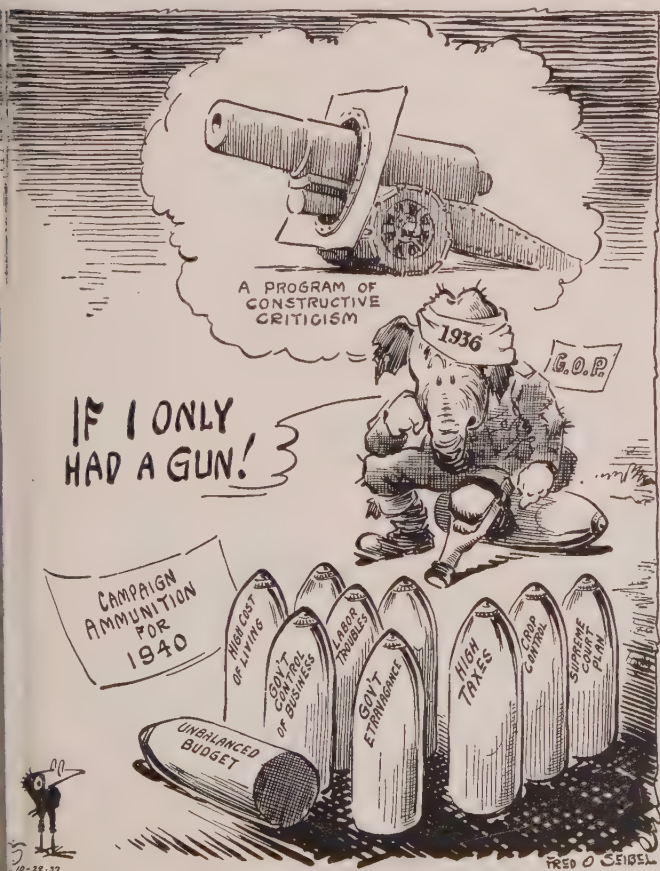
**Great Britain.**—The by-elections to the British House of Commons were very much more numerous during 1937 than in most years; this was largely due to the peerages conferred on the occasions of the accession and coronation of King George VI, and to the resignation of Mr. (Earl) Baldwin and the reconstruction of the cabinet arising therefrom; though no less than 11 out of the 26 were due to the decease of the sitting member.

At the end of the year four constituencies were vacant: Scottish universities (1 seat), Farnworth, and Pontypridd, owing to the deaths of the Rt. Hon. Ramsay MacDonald (*q.v.*) (N.Lab.), Mr. Guy Rowson (Lab.), and Mr. David Lewis Davies (Lab.); and Ipswich, owing to the elevation of Sir John Ganzoni, Bt., to the peerage.

**Electoral Vote.** The representation of the various States in the electoral college nominally selecting the president and vice-president of the United States every four years is determined by adding the two senators to the number of representatives of each State (*U.S. Constitution*, art. 2, sec. 1). Since the first presidential election in 1789 when 69 electors cast votes for George Washington, the number of electors has gradually increased, the only considerable decrease occurring at the time of the Civil War. The total has remained at 531 since the reapportionment following the census of 1910. Despite the constitutional provision that a new enumeration should be made every ten years (art. 1, sec. 2), no adjustment was made in accordance with the population statistics of 1920. Although changes were adopted following the census of 1930, the total figure remained the same as twenty years before. As adjusted according to the 1930 census and as in force during the presidential elections of 1932 and 1936, the 531 votes which will provide the basis for tabulating the results of the election of 1940 are distributed among the 48 States as follows:

Ala. . . . . 11	Ill. . . . . 29	Minn. . . . . 11	N.C. . . . . 13	Tenn. . . . . 11
Ariz. . . . . 3	Ind. . . . . 14	Miss. . . . . 9	N.D. . . . . 4	Texas . . . . . 23
Ark. . . . . 9	Iowa . . . . . 11	Mo. . . . . 15	Ohio . . . . . 26	Utah . . . . . 4
Cal. . . . . 28	Kan. . . . . 9	Mont. . . . . 4	Okl. . . . . 11	Vt. . . . . 3
Colo. . . . . 6	Ky. . . . . 11	Neb. . . . . 7	Ore. . . . . 5	Va. . . . . 11
Conn. . . . . 8	La. . . . . 10	Nev. . . . . 3	Pa. . . . . 36	Wash. . . . . 8
Del. . . . . 3	Me. . . . . 5	N.H. . . . . 4	R.I. . . . . 4	W.Va. . . . . 8
Fla. . . . . 7	Md. . . . . 8	N.J. . . . . 16	S.C. . . . . 8	Wis. . . . . 12
Ga. . . . . 12	Mass. . . . . 17	N.M. . . . . 3	S.D. . . . . 4	Wyo. . . . . 3
Ida. . . . . 4	Mich. . . . . 19	N.Y. . . . . 47		

**Electrical Engineering.** The amount of electric energy generated for public sale in 1937 was greater than ever before, the United States total being a little less than 120,000,000,000 k.w.h., greater than the sum of the outputs of the three largest European countries (Germany, U.S.S.R., Great Britain).



ENTY OF AMMUNITION but he hadn't provided himself with a gun to use it. Post-election view of the Republican presidential campaign, as seen by Seibel. *The Richmond Times-Dispatch*



Increase in load, combined (in the U.S.) with a policy of non-expansion during the depression, forced utilities to enlarge generating capacities rapidly. Many superposed turbogenerators were introduced. One new unit (22,000kw.) was designed to operate at 925°F. and 2,400lbs. per sq.in. pressure, the highest pressure to be used with a turbine of this size. Many new units operate at 3,600r.p.m.; some are hydrogen cooled. Steam accumulators for carrying peaks have not been introduced in the U.S., although many installations are to be found in continental Europe.

Many new large hydro projects were begun or projected, particularly in Italy and U.S.S.R. In the U.S. the Boulder dam project, in which are installed the largest water turbines in the world, began operation.

In the field of transmission and distribution high voltage D.C. transmission underwent intensive study; use of capacitors on lines increased greatly; a 220kv. cable was put in service; and Petersen coils were used in the U.S. after long popularity in Europe.

The expansion of utilities' capacities and the very general industrial and domestic demand for electrical equipment kept the electrical manufacturing industry in most countries working near capacity. Outstanding developments in design, size, or other characteristics were, however, few. In Europe 36kv. generators were being built; but none had been produced in the U.S. In the U.S.S.R. a 100,000kw., 3,000r.p.m. generator under construction was the largest to be constructed in Europe, although larger ones have been built in the U.S. Although industrial production in the U.S. did not reach the 1929 peak, electrical energy used in industry was approximately 15% greater, indicating the steady electrification of American industry, now almost complete.

It is an interesting commentary that the electric appliances available to domestic consumers were far more extensively used in the U.S. than in other countries, except possibly Canada. Electric refrigerators, for example, of which there are more than 5,000,000 in use in the U.S., were almost rarities abroad.

Rural electrification was vigorously pushed, but the situation in the U.S. remained bad, with only one farm in six electrified. The primary problem was to reduce costs so that extensions into sparsely settled territory could be made without loss. The impetus given by the Rural Electrification Administration in the U.S. led private utilities to do far more than they previously did in this line. England appeared to be definitely ahead of the U.S. in rural electrification, but the disparity in distances to be covered in the two countries made comparison of small value.

In transportation an important event was the beginning of further electrification of the Pennsylvania railroad's lines. Other important electrifications were under way in Italy, France, Germany, U.S.S.R., South Africa and England.

Trolley buses increased in popularity. They were extensively used in some European countries (more than 1,200 in London alone) and the demand for them in the U.S. steadily increased. In England a new electric automobile was introduced. The use of electric drive for ships decreased, or at most remained static, although the Atlantic speed record was held by the electrically driven "Normandie."

In communication, developments included the widespread use of carrier telephony, television broadcasting, the use, both experimental and commercial, of coaxial cables, and the contemplated commercial use of facsimile reproduction. There was no important development in radio broadcast transmission or reception. More than 15,300,000 telephones were in service in the U.S. at the end of the year.

Television broadcasting, which had been carried on in Germany, was begun in England, France and U.S.S.R. The English appeared to be in the lead. They standardized on 405 lines inter-

laced, 50 frames per second. Of considerable importance was the fact that television reception was obtained in one case at 80 miles from the transmitting station, a greater distance than was originally considered possible. In the U.S. television remains in a practically fully developed experimental stage, awaiting an economic rather than a technical development.

Coaxial cables were installed in several countries. In the U.S. the experimental New York-to-Philadelphia line was used successfully in commercial service (240 telephone and telegraph channels) and for the transmission of television programs, but was removed from service in an attempt to increase the frequency band transmitted from one to two million cycles.

In the United States where the population is spread over a large area, the development of a wide band conductor to transmit television programs from one station to another is the only means now apparent for covering a large area (television broadcasting is usually considered limited to optical distances).

The 100th anniversary of Wheatstone's first use of the telegraph passed almost unnoticed, being a commentary on the decreasing relative importance of the telegraph in communication.

In the field of illumination, developments include appreciable increase in the efficiency of lamps, new gaseous lamps for high-way illumination, and the beginning of the development of "cold light," in which there are great potentialities not likely, however, to be available commercially for some years. In England discussions of illumination, even of highway illumination, still included consideration of gas illuminants. (See also PUBLIC UTILITIES; RADIO, SCIENTIFIC DEVELOPMENTS OF; and the articles on Electrical subjects in the following pages.) (J. G. Bd.)

**Electrical Industries.** The total output of electric utilities in the U.S. during 1937 was approximately 119,000,000,000kw.h., which exceeded that of the previous year by 8.5%. This output was comprised of 74,000,000,000kw.h. from fuels, 40,000,000,000kw.h. from water power and 5,000,000,000kw.h. purchased from other sources, including that imported from Canada. During the year the monthly output was substantially in excess of that in the previous year, until the recession in general business caused a small decrease during the two final months. The foregoing statistics are exclusive of power generated and consumed in private industrial plants, the aggregate of which was a very large figure, about 25% of the utility output. Among the countries of the world the U.S. produced about one-third of the total output; statistics for 1937 are not available, but in 1935 the countries ranking next were Germany with about 11%, Russia with 7%, Canada 7%, United Kingdom 7%, and Japan 6%.

Generating capacity of the utilities in the United States at the close of 1937 was approximately 35,042,000kw., of which about 71% was in steam plants, 27% in hydro plants and the remainder in plants using internal combustion engines. New generating equipment installed during the year comprised 1,050,000kw., and equipment retired amounted to 268,000kw., leaving a net increase of 782,000kw. Construction expenditures by private utilities for steam generating stations amounted to approximately \$113,060,000 and for hydro-electric plants \$10,540,000 or a total of about \$123,600,000. There was a trend toward higher operating economy through the adoption of higher steam pressures and temperatures. Many of the new generating units represented high-pressure equipment designed to exhaust their steam to older units operating at moderate pressures; these so-called "topping" units effected a marked increase in over-all economy while also prolonging the useful life of older equipment. Industrial generating plants were substantially improved and enlarged during the year, but statistical data are not yet available. Th



aggregate generating capacity in such plants is about one-half that in utility plants. The Federal Government continued construction work on its various hydro-electric power projects, including the Tennessee valley program under TVA, the Grand Coulee project, Bonneville, and others.

Total construction expenditures in the private utility field during 1937 were estimated at \$455,500,000 or an increase of about 57% over 1936. This total included \$203,000,000 for distribution poles, wires and equipment. About 794,000 new customers were added, making a total of approximately 27,000,000. These figures include about 157,000 farms which were connected during the year, bringing the total to about 1,200,000. The Rural Electrification Administration of the Federal Government expanded its activities in promoting the construction of rural distribution lines and over 50,000 farm families are already benefiting from this program. Today about one farm in every six in the U.S. enjoys some of the benefits of electric service.

Total revenue from sales of energy by private utilities was approximately \$2,200,000,000 or about 0.75% over the total in 1936. The average revenue for all classes of service was 2.22 cents per kw.h., compared with 2.27 cents in 1936. Average annual use per residential customer in 1937 was 797kw.h., compared with 727 in the previous year. Average revenue from residential service was 4.37 cents per kw.h., as against 4.65 cents in 1936. The average cost in 1937 was about one-half that in 1913.

Electrical manufacturing made substantial gains in volume during 1936 and continued this progress through the first half of 1937. The industry is outstanding for its dependence on research and development to produce new uses and applications for electrical energy, new equipment and appliances, improved practices in construction and operation, and lower cost to consumers. The year was notable for its technical progress in manufacturing, construction and operation. Much progress was made with improved methods of electrical distribution, including low-cost lines for serving rural areas. On the economic side, the utilities under private ownership protested against public competition from new hydro-electric projects financed by Federal funds, but as the year closed no agreement on a mutually satisfactory national policy had been reached. Rapid recession in general business conditions during the second half of 1937 retarded the growth of utility output and caused a decline in manufacturing activity. The industry lost the last of its great pioneers through the death on March 13 of Elihu Thomson.

**BIBLIOGRAPHY:** Current files of *Electrical World*, *Electric Light and Power*, *Electrical Engineering*, *General Electric Review*, *The Electric Journal*, and other technical periodicals.

**Great Britain.**—The national grid system of Great Britain was extended during the year 1937 by the construction of several additional lines of 132kv. and also 33kv. At the close of the year the grid embraced a total of approximately 39,000 miles of line. The total number of electricity units generated by authorized undertakers during the year was 22,905,000,000, which was an increase of 13% over the previous year and double that of 1931. The number of selected generating stations in the grid remained at 37. The vulnerability of the overhead grid system from the standpoint of national defence is focussing attention on the future possibilities of underground cable transmission at high voltage.

Power station additions authorized in 1936 were in progress during 1937 but relatively few reached completion. The Central Electricity Board authorized power station additions in 1937 aggregating 635,000kw., consisting of 18 turbo-generator units ranging in size from 3,500kw. to 100,000kw. Operating steam pressures as high as 1,900lb. per sq. in., temperatures as high as 950° F., and generator voltages as high as 33kv., were features of some of the new installations. Many extraction-type turbo-

generators were ordered for industrial plants.

Farm mechanization made important progress, owing in large part to a prevailing shortage of labour, as well as much greater convenience and efficiency in farm operations. At the close of the year over 30,000 farms were supplied with electricity, compared with about 600 only nine years ago.

Electrical manufacturing in the United Kingdom, for home and export, as measured by the index of orders for heavy generating plants, stood at 171 for 1937, based on the monthly average of 1920 as 100. The index of United Kingdom electrical exports of combined apparatus and machinery was 190, and for imports was 152, based on the respective monthly averages for 1932 as 100. The combination of complete industrial recovery and the Government's rearmament program resulted in sustained activity throughout the year. There were 319,600 workers employed in the electrical manufacturing industry in July 1937, compared with 273,000 a year previous. At the close of 1937 only about 5% of the workers were unemployed. The value of British electrical exports in 1937 was practically double that of the worst year of depression (1933) and only a little more than £1,000,000 below the high record of 1929. In volume or quantity the exports were probably larger than those of any previous year.

In the Dominion of Canada the total generating capacity reached 8,112,750h.p., which included an increase of 167,160h.p. during 1937. Over 95% of this capacity is water power. No fewer than 60% of the families, both urban and rural, performed all household labours with electricity.

**BIBLIOGRAPHY:** Annual review issues of *The Beama Journal* and *The Electrician*, and *The Journal of the Institution of Electrical Engineers* for January 1938. (F. F. F.)

**Electric Lighting.** Under the terminology of electric discharge lamps, progress centred in 1937 on sources employing mercury and sodium vapour. Evolving to regular volume production there were sold in the United States approximately 65,000 mercury and 7,500 sodium lamps. In Great Britain some 70,000 mercury lamps went into service, approximately half for industrial, half for street lighting purposes. Trial installations of sodium lamps grew in number chiefly in western Europe and the United States, largely confined to suburban highways and bridges. The majority of mercury vapour lamps (high pressure types) in North America were installed in factories, largely because at 40 lumens per watt they approximately double the filament lamp output. On account of a deficiency in red they were not found suitable for stores or offices, but proved especially decorative when applied to the lighting of shrubbery and trees and to the floodlighting of building façades.

Commercial sizes of mercury lamps in North America were 400, 250, 100 and 85 watts to which in Great Britain were added 125 and 150 watt sizes. Sodium lamps in the United States were produced in 6,000 and 10,000 lumen sizes, the latter predominating. Experimental super-pressure mercury lamps appeared, notably the water-cooled quartz capillary types of 300 and 1,000 atmospheres. These sources produced a brightness exceeding that of the sun with promise of high concentrations for optical projection.

Employing low pressure mercury vapour in a tubular lamp and by coating the inside of the tube with compounds that fluoresce under the short wave excitation, there were introduced new lamps noteworthy for high efficiency colours. In America some three sizes, namely, 15, 20 and 30 watts were standardized respectively 18, 24, and 36 inches long and emitting white, blue, green and pink light at some 40 lumens per watt.

There was made commercially available a lamp emitting radiation chiefly between 2,000 and 3,000 amp., finding usefulness in killing air-borne bacteria, and for sterilizing food containers; also

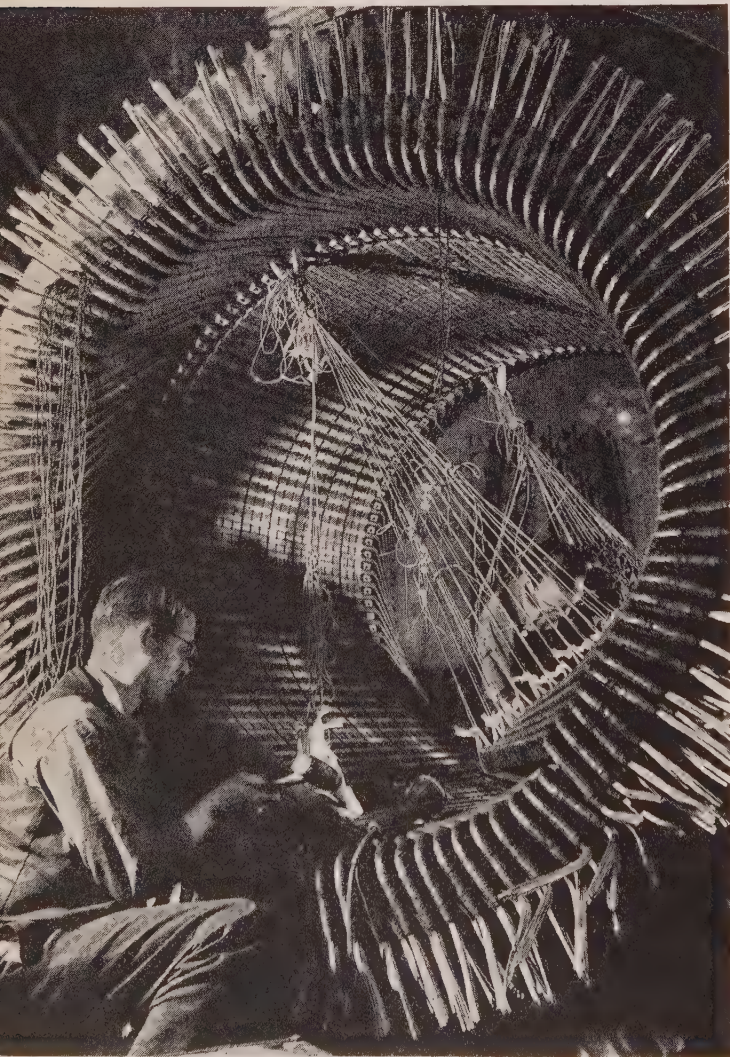


killing the spores of fungi hence reducing moulds on meats and baked goods. In bulb form these special lamps began to find service in the medical treatments of superficial wounds and skin diseases.

An increase of some 10% in light output efficiency followed double-coiling the tungsten wire filament in smaller wattages of American-made lamps. European research concentrated upon more viscous gas within the bulb to reduce convection heat losses, chiefly employing the rare atmospheric constituent, Krypton.

**Lighting Materials and Applications.**—A widespread usage of glass blocks and moulded plastic forms appeared in 1937 giving expression to architectural lighting. Transparent plastics incorporating fluorescent dyes gave further incentive to the use of ultra-violet or black light for interior decoration.

Notable surveys of schools indicated need of lighting intensities for classrooms upward of 20 foot-candles and suggested more cheerful colours of paints. In factories, largely as a result of industrial lighting surveys in the United States and Great Britain, fixtures developed consisting of large hoods or indirect reflecting surfaces with silvered-bowl lamps, and more attention to the spectral or directional quality of light. A compulsory factory building code in England was a major incentive to better lighting conditions, while the British Government's study of the "grumble point" produced data showing that artificial light is needed where daylight on the work falls to approximately 5 foot-candles.



FITTING INSULATED COPPER COILS in a condenser for the control of power on an electric transmission line

## ELECTRIC POWER GENERATION

Polarizing screens reducing automobile headlight glare were introduced experimentally, together with sealed-in small size automobile head-lamps combining reflector and lamp bulb into one unit. Notable installations of outdoor lighting particularly accompanied by water effects were the Paris and Dusseldorf Expositions, the coronation of George VI, and floodlighting of French cathedrals. (See also GAS; INTERIOR DECORATION: *Artificial Illumination*.) (S. G. H.)

**Electric Power Generation.** Electrical energy continues to be obtained in the conventional manner from fuel and water power resources. Most of the available water power sites which are economically important from the standpoint of electric power production and disposition alone have been developed. The majority of the hydro-electric developments that are being undertaken at the present time are justified economically for the production of electrical energy only when considered in connection with irrigation, flood control and navigation, or a combination of these factors. Undertakings of such broad scope are necessarily of a public nature and consequently have been carried on as complete or partial public or governmental enterprises. Although the amount of electrical energy obtained from hydro-electric generating stations is relatively large, the greater portion is produced from steam driven prime-movers in fuel-fired generating stations. This type of undertaking has been restricted to the production and disposition of steam and electrical power, and as a result has been developed by private enterprise.

The principal improvement in 1937 in the hydraulic turbine has been the development of the adjustable blade propeller to improve the efficiency performance of the turbine under different water flow conditions. No major changes have been required or made in the design of generators driven by this type of prime-mover. Most of the steam driven turbines in operation at the present time have been designed to utilize steam at moderate temperatures and pressures. Large increases in the output and radical improvements in efficiency of steam turbines have been obtained by materially increasing the temperature and pressure of the inlet steam. Inlet steam pressures and temperatures of 1,200 lbs. per sq.in. and 950° Fahrenheit respectively are used quite generally for most of the steam turbines now going into service. A few projects are under construction using inlet pressures as high as 2,400 lbs. per sq.in. These increased pressure and temperature requirements have made it desirable and essential that highest possible rotational speeds be used in order to keep the weights and dimensions of the stator and rotor elements as small as possible. This requirement of the steam turbine has resulted in the recent rapid superseding of the 4-pole generating unit by the 2-pole unit.

The radical increase in steam temperatures and pressures has resulted in a vast increase in the output possible from steam turbines operating at speeds needed by the 2-pole generator. There are no similar unexploited features in the design of the 2-pole generator from which its output could be correspondingly increased to meet the turbine requirements. A material increase in the output of the 2-pole generator has been obtained from the summation of several incremental increases resulting from improved mechanical, electrical, thermal and magnetic properties of materials, more effective ventilation and improved design proportions and better utilization of materials. When using the best materials and design proportions available, it is still impossible to build the 2-pole, 60-cycle generators with air cooling in sufficiently large ratings to meet the electrical industry's present-day steam turbine requirements.

The additional output rating of the 2-pole, 60-cycle generator





STREAMLINED, articulated street railway unit, operated by the Key System of the San Francisco-Oakland Bay Bridge

was obtained by using hydrogen as the cooling medium. As compared to air, hydrogen has a density of 7%, heat transfer coefficient of 135%, thermal conductivity of 700%, and specific heat of approximately 100%. With these properties, the use of hydrogen as the cooling gas makes it possible to obtain an increase in rating of approximately 15% over that obtainable with air cooling, on the basis of maintaining given rating and performance characteristics. Since the windage-friction and ventilation losses are directly proportional to the density of the cooling gas, they are practically eliminated when hydrogen is used as the coolant. The increase in efficiency is on the order of 0.6 to 0.9%, depending on the rating. Since a mixture of hydrogen and air is explosive over a range of approximately 82 to 12% hydrogen, it is necessary to maintain a high percentage of hydrogen in the machine in order to avoid an explosive mixture and a fire hazard. A similar increase in rating and improvement in efficiency performance without any explosion hazard can be obtained by using helium as the cooling gas. At the present time, however, the use of helium gas for this application is excluded on account of its scarcity and excessive cost. (C. M. LA.)

## Electric Transmission and Distribution.

The year 1937 brought no fundamental changes in the transmission of electric power either over long or short distances. The technique of alternating-current transmission remains as before. Neither did its potential competitor, the direct-current transmission system, gain ground in practical application.

There has been some increase—as is traditional—in overhead line mileage. The recently established maximum voltage level for such lines has not been exceeded; Boulder dam's 287,000 volts still stand unchallenged. In the field of underground transmission the most helpful contribution of the year may well be the additional operating experience gained with the world's only 20,000-volt single-conductor, oil-filled cable installation (put into operation in Paris, March 1936). The successful performance of this cable should strengthen confidence in underground transmission in this voltage class and in the reliability of such high-voltage cables.

The question of alternating current versus direct current is an old one. The renewed interest in the problem, quite apparent during recent years, is primarily a result of the very material development in static apparatus for conversion from one type of current to the other coupled with the reasonable expectation that still further developments are not too remote. If the latter prognostication be true, is it possible to design a direct-current system superior to the conventional alternating-current system? The former would be devoid of certain undesirable features inherent

in the alternating-current system, notably those affecting synchronism and stability which greatly increase and ultimately become unmanageable as transmission distances and blocks of power to be transmitted increase. It must not be assumed *a priori*, however, that the direct-current system, designed along the general lines now conceived and which, indeed, appear to embody real possibilities, might not be afflicted with offsetting difficulties in view of the fact that the new elements which will enter into it have not as yet reached ultimate development (conversion and switching equipment). Neither is the long-time effect of high direct-current voltages on line and cable insulation fully understood at present. Theoretical studies continued during 1937 although possibly at a slightly decelerated pace. This decrease was no doubt caused by a fuller realization of the many major technical problems which still remain to be solved. Thus practical high-voltage, direct-current transmission has been delegated to the state of a comparatively long-range proposition even though in due time it may prove itself to be the system.

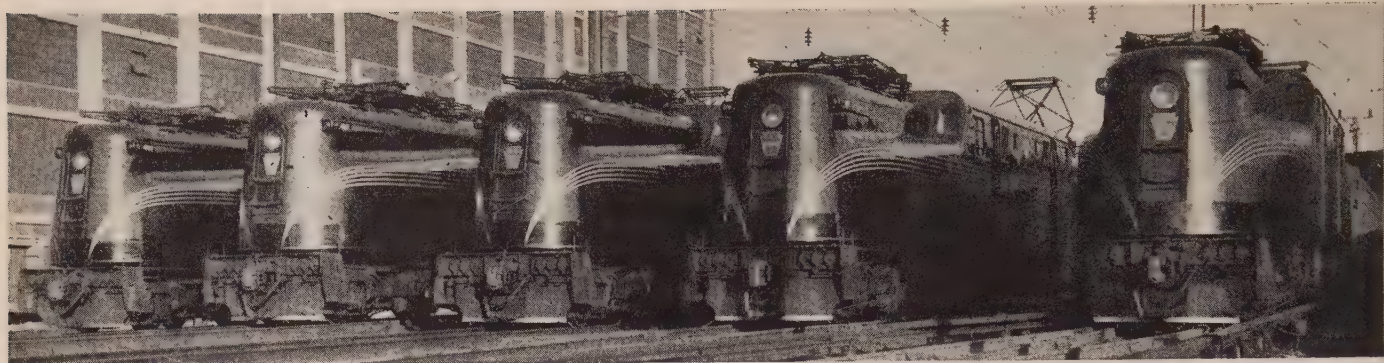
To date, the direct-current system for transmission purposes and using static conversion equipment is reduced to practice in a single case on a moderate-scale, constant-current basis (substantially an experimental installation, in U.S.). In addition there is the old constant-current system (in France) operating on the Thury principle. Many engineers, however, believe it is questionable whether constant current rather than constant potential is the correct and ultimate answer.

Progress was made in development and application of equipment associated with alternating-current transmission. Thus there was further application of high-speed circuit breakers, which were recognized as the most effective single agent in combating the destabilizing effects of faults on important transmission lines. They help to keep the systems intact and operating by rapidly eliminating the faulty circuit. Further experience was also secured with ultra-high-speed, high-voltage reclosing circuit breakers, this type of breaker being particularly meritorious for important single-circuit tie lines.

Noteworthy also was the further application of and experience with carrier-current relaying of important lines. The outstanding features of this type were selectivity and speed. It now seems to have become thoroughly established that this type of relaying hereafter will be much more frequently applied. Carrier currents have also been used recently for remote supervisory control.

**Distribution.**—The most significant general trend in electric distribution may well be the extension of service to rural districts. The economics of rural electrification was so unattractive that this class of development was relegated to the background while the more favourably located load areas were cultivated. The recent





STREAMLINED ELECTRIC LOCOMOTIVES on the Pennsylvania Railroad, which extended electrification from Philadelphia to Harrisburg, Pennsylvania

impetus imparted to rural electrification in most countries has several explanations: First, the private utilities having developed their urban systems and loads had approached the part of their power-supply programs which began to include rural areas. Secondly, a marked increase in usage by the average rural customer had come about as a result of cheaper domestic appliances and farm devices. Thirdly, there was a general recognition of the social desirability of getting electricity to the farm for both lighting and power purposes. Fourth, a promotional influence was created in many countries by State (Federal) or municipal organs (for example, the Rural Electrification Administration in the U.S.). (See also RURAL ELECTRIFICATION.)

As to plant, distribution efforts were directed toward the development of suitable, simple, and economic rural systems. Practical and relatively inexpensive but fully reliable designs in various forms for poles, lines, indoor wiring, etc., resulted. Furthermore, the establishment of appropriate rate structures was given much attention. With regard to the private companies there is no doubt that extending service to rural districts quite frequently involves a real element of risk. Where private companies are involved it is reasonable to believe, therefore, that further progress in rural electrification will be dependent upon the rapidity with which initial losses may be recovered and the service already undertaken put on a sound economic basis.

During 1937, attention was given to the question of underground distribution in residential districts. Underground systems for this purpose are naturally costlier than overhead systems. So far, residential underground distribution is only sparsely adopted. The power companies, however, are cognizant of the situation and studies were made to develop practical and inexpensive designs. The possibilities for reducing cost were limited by the requirement that reliability must be high. (O. G. C. D.)

**Electric Transportation,** of late years, has become diversified into four rather distinct categories. These are: (1) electric street and interurban railways, (2) electrically operated subways and elevated railway lines, (3) electrified trunk line railways, and (4) electric trackless trolleys, or trolley buses. While all of these types of electric transportation have certain points in common, their most recent developments have followed somewhat divergent lines.

**Electric Street and Interurban Railways.**—In the field of electric street and interurban railways, chief interest has centred in the progress being made with the new type of light-weight, fast, quiet car developed in the United States by the Electric Railway Presidents' Conference Committee. Rubber springing and improved control and braking equipment are the outstanding features of this design. To date (1937) a total of 645 of these cars have been built and put in service in seven cities. The first orders were placed as early as 1935, but it was not until 1937 that

a sufficient number of units had been in service for a long enough period to permit accurate appraisal of results.

Experience during the first year of their operation in Brooklyn, N.Y., showed that their improved performance attracted 36% more riders than had been accustomed to patronize the older type vehicles previously used. Similar results were reported from other cities. In every instance there was a substantial increase in schedule speed with the new cars. It is reasonable to expect, therefore, that cars of this type will play a dominant part in rolling-stock purchases during the next few years.

No cars of the "Presidents' Conference" design have yet been put in operation outside of the United States, although lively interest has been shown by street railway operating companies in all parts of the world. Patent arrangements have now been perfected in Italy and building of this type of vehicle may be expected in the near future.

New cars of more conventional design have recently been put in service in many of the larger cities throughout the world. Improved appearance has been sought in some instances by streamlining the bodies. Particularly notable in this respect are the latest cars built for Moscow and other Russian cities.

**Gasoline and Diesel Buses.**—With the great development that has taken place in gasoline-propelled and Diesel buses, as well as in electrically propelled trolley buses, there has been a trend toward the substitution of railless vehicles in place of street cars. This trend has been most in evidence in the smaller cities and in a few of the very largest cities such as London, New York and Paris where there are extensive underground railway systems to supplement the surface transportation facilities. In general, the effects of these substitutions have been smaller than is popularly supposed. For example, in American cities over 500,000 population, where the largest part of the transit business is concentrated, there has been an actual increase in the number of street car riders in recent years. Outside of these cities the volume of street railway riding has declined. Taking the country as a whole the electric street cars are now carrying about 68% of the surface business, trolley buses 2% and motor buses 30%.

**Rapid Transit.**—In the field of rapid transit—underground and elevated railway lines—the most interesting recent developments have taken place in London. There the London Passenger Transport Board has introduced new streamlined equipment having many points of superiority over the older equipment. There, also, the so-called "metadyne control" is being tried. This is an arrangement whereby a dynamotor is utilized to raise or lower the voltage on the propulsion motors as desired. Another interesting development in London is the program for extensive use of welded rail-joints on the rapid transit lines to eliminate the noise and jarring that result from the passage of wheels over rail ends not in close and accurate contact. Welded rail-joints have long been widely used by street railways, but their use on rapid transit lines is something of a novelty. In the United States the Brooklyn-Manhattan Transit Company is experimenting with continuous



United States Passengers Carried in 1937

	Electric Surface Railways	Rapid Transit Railways	Electrified Suburban Railroads	Trolley Buses	Motor Buses	Total
Cities over 500,000 . . . . .	4,625,000,000	2,359,000,000	138,160,000	68,500,000	1,140,000,000	8,330,660,000
Cities 100,000-500,000 . . . . .	1,815,000,000	..	..	178,000,000	1,195,000,000	3,188,000,000
Cities 25,000-100,000 . . . . .	391,000,000	..	..	19,200,000	575,000,000	985,200,000
Communities under 25,000 . . . . .	40,000,000	..	..	..	116,000,000	156,000,000
Interurban Areas . . . . .	450,000,000	..	..	..	152,000,000	602,000,000
Total for United States . . . . .	7,321,000,000	2,359,000,000	138,160,000	265,700,000	3,178,000,000	13,261,860,000

sections of welded rail in lengths up to 1,000ft. as compared with lengths of only about 270ft. in London.

Extensions of the rapid transit systems have been undertaken recently in New York, Philadelphia, Paris, Moscow, Buenos Aires and elsewhere. These, however, have been of local rather than of general significance. Similarly there have been many extensions of trunk line railway electrifications, particularly on the continent of Europe, but they have involved comparatively few new technical developments.

**"Trackless Trolleys."**—Perhaps the most interesting recent development in the entire field of electric transportation has been that of the trolley bus or so-called "trackless trolley." Installations of this type were first made many years ago but they did not turn out particularly well due to limitations in the design of the vehicle. With the improvement in the gasoline motor bus, however, a better type chassis became available for trolley buses and the newer vehicles are proving far more satisfactory than the old. More than 1,100 of these trolley buses are now in service in the United States and about 2,500 in Great Britain. London has about 600 in service and plans to replace its remaining tram lines during the next few years, thereby bringing its total of trolley buses to about 1,000. Moscow also has a large program in prospect which will probably double the 389 trolley buses now operated there. Other cities all over the world are keenly interested in this development and the next few years may be expected to see a rapid increase in the number of units in operation.

From the technical standpoint the development of the so-called "all-service" vehicle in use on the lines of Public Service Co-ordinated Transport in New Jersey has attracted attention. This is a very flexible combination trolley bus and gas electric motor bus which can be operated under its own power or by power obtained from overhead electric wire. Some 500 of these vehicles are now being operated by the New Jersey company, and several other companies are experimenting with them. The added first-cost and extra weight involved in having duplex sources of power will prob-

ably tend to limit their use to locations where flexibility is of great importance, however, and trolley bus expansion may be expected, in the main, to follow more conventional lines.

#### World's Largest Street Railway Systems (As of Jan. 1, 1938)

Name of System	Number of Cars	Miles of Track
Chicago Surface Lines . . . . .	3,669	1,111
Städtische Strassenbahnen, Vienna . . . . .	3,370	178
Berliner Verkehrs-A.-G. . . . .	2,996	358
Anglo-Argentine Tramways, Buenos Aires . . . . .	2,931	380
Philadelphia Rapid Transit Co. . . . .	2,146	623

Street railways in the city of New York operate approximately 2,600 cars on 742 miles of track but the operation is divided among several systems.

#### World's Largest Trolley Bus Systems (As of Jan. 1, 1938)

Name of System	Number of Trolley Buses	Miles of Trolley Bus Route
London Passenger Transport Board . . . . .	594	122
Public Service Co-ordinated Transport, N. J. . . . .	500	287
Mostrambaytrest Raduskaya, Moscow . . . . .	389	not available
Indianapolis Railways . . . . .	152	96
Portland Traction Company . . . . .	140	38

#### Rapid Transit Systems of the World (As of Jan. 1, 1938)

	Miles of Route	Cars		Miles of Route	Cars
Barcelona . . . . .	37	92	London . . . . .	220	3,154
Berlin . . . . .	47	1,146	Madrid . . . . .	12	144
Boston . . . . .	22	528	Moscow . . . . .	16	74
Buenos Aires . . . . .	22½	204	New York . . . . .	284¾	8,257
Chicago . . . . .	81	1,640	Paris . . . . .	78	2,573
Cleveland . . . . .	12	32	Philadelphia . . . . .	23¼	401
Elberfeld . . . . .	10	67	Prague . . . . .	15	No data
Glasgow . . . . .	7	50	Sydney . . . . .	2½	No data
Hamburg . . . . .	25	300	Tokyo . . . . .	8	20
Liverpool . . . . .	6½	57	Vienna . . . . .	16½	384

(J. A. MI.)



MODERN STREET CAR, which uses rubber to reduce noise and vibration and which is a development of five years of research

**Electrification, Rural:** see RURAL ELECTRIFICATION.  
**Electron:** see CHEMISTRY; MATTER, STRUCTURE OF.

## Elementary Education.

Recent developments in elementary education have been characterized by three major trends. The first centres around a modified conception of the nature of the child and the learning process growing out of more recent findings in psychology, biology, and anthropology. The second has to do with a reconstructed curriculum and the third involves changes in the role of the teacher occasioned by a new conception of leadership and administration.



The sciences which throw light on human nature and behaviour conceive human beings to be unique dynamic organisms, which react as totalities, which are essentially social and in constant process of growth and change. Studies of learning take account of these characteristics of the human organism and lead to a conception of the learning process which holds life and learning to be integrally related. The child learns by living. Anything to be really learned must be actually lived. Essentially this is a creative conception of learning. Since every child is unique and capable of some creative effort different from that which can be put forth by any other human being, learning becomes a process of self realization. Learning is living in such a way as to make the most of one's potentialities. Teaching is helping people to live so as to make the most of their possibilities.

Self realization as here considered has an essentially social setting. Individuals can realize their greatest attainments only as they make the greatest contributions to the enrichment of the social group. Respect for personality is a social concept. The only way to attain a school or a society in which each personality is respected is to evolve a school or society in which each person so lives that he respects the personality of every other individual. Thus, while the newer conception of the learning process stresses creative growth along unique lines for individuals, it simultaneously places greater emphasis upon social attitudes, social responsibility and self discipline.

The above conception of the human organism and of the learning process is in large part responsible for the reconstruction taking place in the curriculum, in the life of the school. Instead of being composed of fixed bodies of subject matter, the curriculum is in constant process of growth and change. Instead of being uniform for all pupils, it has almost endless variety as it responds to the needs of millions of children. The social emphasis has made a school within four walls an impracticable venture. On the contrary, the entire community must be brought into play, including homes, churches, community organizations, museums, libraries, social settlements, and industrial enterprises. Study of the community is thus a substantial element in the curriculum. The end of such study is purposeful participation in social living.

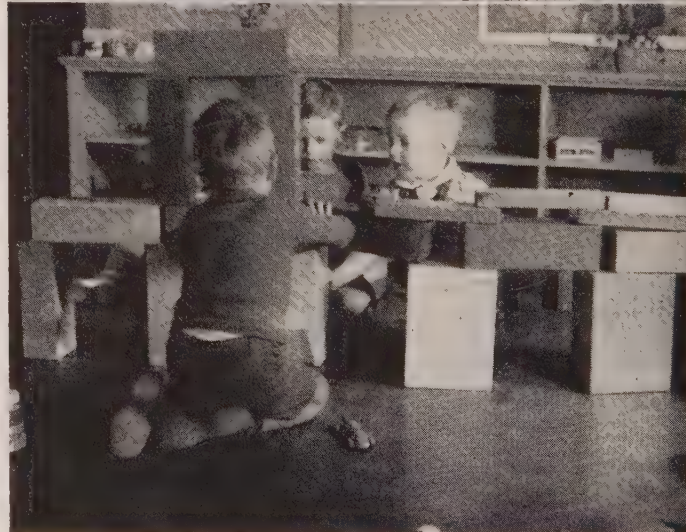
Education as described above cannot be achieved in an authoritarian setting. As an educational philosophy becomes more integral in character it calls for a more integral implementation. This means that every aspect of the school and society will be examined in order to find out what is its bearing on the success of the educational enterprise. Such examination has found our administrative conceptions in conflict with our educational aims. Accordingly there is being evolved a new pattern of educational administration and leadership. Under this pattern leadership emerges from the life of the school and is determined by the life of the school instead of being itself a force which controls the school. Such leadership demands a new role for the teacher in which he is viewed, not as a mere hireling, but as a professionally competent leader who is himself to make the really important decisions in his daily activities. Leadership must thus be creative and democratic as education is creative and democratic.

More than any other level of education, the elementary school reflects the true spirit of American education. It is in the elementary school that educational practice approaches our educational theories most closely. It is here that experimentation

CHILDREN IN SKOKIE JUNIOR HIGH SCHOOL, Winnetka, Illinois, learn how to use a library by acting, in turn, as librarian

A STUDY OF SWITZERLAND inspired the third grade to build a Swiss chalet  
WINNETKA CHILDREN in primary grade correlating their own individual experiences with a reading lesson

SCENE IN THE NURSERY DEPARTMENT, where parents as well as children are trained in child education





flourishes with the least interference and it is from this level of education that newer techniques and procedures are adopted. For these reasons current trends in elementary education are likely to be indications of future trends in the higher levels of education. Thus both educators and laymen will be interested in the developments in elementary education both for their own sake and as a barometer of educational trends generally. (E. O. M.)

**Great Britain.**—The issue of an entirely new volume of *Suggestions for the Consideration of Teachers* (Board of Education 1937), is as notable a landmark in the history of English education as was that of the original volume 30 years ago. Physical education, hygiene, and craftwork all receive marked attention, the League of Nations is discussed as a "subject" in an appendix, and the influence of mechanical aids to education is felt throughout the work. The senior school is indeed the dominant theme, as it has been the dominant interest, of English educational administration for nearly 20 years. Not yet has the junior school received its own proper attention, though nursery schools for different reasons have obtained increasing support.

Two related but contrasted problems have occupied the educational stage in 1937: the problem of a shifting population and the creation of child-congested areas in the new housing estates on the fringe of every large city, and that of the falling child-population, particularly felt in the older parts of a city, so that while new schools in the outer ring are overcrowded as soon as built, reconditioned schools in the inner ring are found too large for present requirements. The tendency therefore is to think of elementary education, particularly at the senior school stage, increasingly in terms of club or communal organization, so that in both inner and outer rings school buildings will be used for a variety of educational and social purposes throughout the week, both during the daytime and the evening, and not be left empty and unused, as in times past, on two days of the week.

The reorganization of primary education in accordance with the famous Hadow report continues, not only in terms of buildings, playing fields, and general amenities, but also in terms of a re-orientation of studies. There has been much activity in raising the status and enlarging the scope of craftwork and of the other so-called "leisure" subjects. To promote this, the Board of Education issued a circular (1453) calling upon local education authorities, universities, and training colleges to make more systematic provision for refresher courses for teachers than is possible under the long established and still valuable vacation courses. (See EDUCATION.) (A. A. C.)

**Elixir of Sulphanilamide:** see AMERICAN MEDICAL ASSOCIATION; DRUGS AND DRUG TRAFFIC; MEDICINE: *Sulphanilamide*.

**Elizabeth, Queen** (1900— ), Queen-Consort of Great Britain and Ireland; youngest daughter of the 14th Earl of Strathmore and Kinghorne, K.G., K.T., born at St. Paul's Waldenbury, Herts, Aug. 4, 1900; married H.M. King George VI (then H.R.H. the Duke of York), April 26, 1923; has two daughters, the Princesses Elizabeth (b. 1926) and Margaret Rose (b. 1930). On his birthday, three days after his accession to the throne on Dec. 11, 1936, the King conferred on her the Order of the Garter, and in Feb. 1937 she was appointed Dame Grand Cross and Grand Master of the Royal Victorian Order.

On May 12, Her Majesty was crowned with the traditional ceremonial, after her husband, in Westminster Abbey, and took part with the King in the celebrations that followed the event, including the drives through London, the State banquets, and the Spithead naval review. On July 7, during the royal visit to Edinburgh, Her Majesty's installation as Lady of the Order of the

Thistle took place in St. Giles's cathedral, she being the first woman to be admitted to that historic order, which had been bestowed on her on May 11.

At the end of July, she accompanied the King on his visit to Northern Ireland, and Oct. 16 inspected the London Scottish, of which regiment she is honorary colonel.

**El Salvador:** see SALVADOR, EL.

**Embassies, Great Britain:** see AMBASSADORS AND ENVOYS: *Great Britain. To and from.*

**Embassies, United States:** see AMBASSADORS AND ENVOYS: *United States. To and from.*

**Emeralds:** see GEMS AND PRECIOUS STONES.

**Emigration:** see POPULATION, MOVEMENTS OF.

**Encyclopaedias.** The promise made in 1929 that the 36th and final volume of the *Enciclopedia Italiana* would be issued in 1937 was fulfilled in November, when Senator Treccani, founder of the Istituto Giovanni Treccani, under whose auspices it was undertaken and whose generous use of his profits from armament manufacture during the World War had made its inception possible, presented the final volume to Signor Mussolini. In spirit and even in form this great work avowedly took the *Encyclopædia Britannica* as its model, though being a State-aided undertaking, it was able to exceed the *Britannica* in bulk of content; its sumptuous illustrations especially mark an epoch in the history of reference-books.

In Great Britain and America the *Encyclopædia Britannica* produced a special coronation issue of the current edition, incorporating among other changes those rendered necessary by the court events of 1936-37. The present *Book of the Year* is the first of a series of annual supplements to the *Encyclopædia Britannica*. The great demand for encyclopaedic information in popular form has in the past few years led several American and British newspapers to publish encyclopaedias for cheap circulation among their readers. The great *Russian Encyclopaedia*, begun in 1926 under the aegis of the Soviet Union Government, is now (1938) about three-quarters complete; though, as in the case of the *Oxford English Dictionary*, whose supplementary volume appeared in 1933, the volumes have not been published in alphabetical sequence. The *Encyclopédie Française*, arranged non-alphabetically, is planned to occupy 21 volumes, of which 8 have already appeared. The 21st and final volume of a Hungarian *Nagy Lexicon* was published in 1935, and a concise one-volume *Kis Lexicon* in 1936. An 8-volume *Estonian Encyclopaedia* was published in 1937. In Germany, a new and extensive State-aided encyclopaedia on Nazi lines is in course of publication.

**Endocrinology.** The last few years have seen an unprecedented advance in our knowledge of the chemical co-ordination of the body, particularly co-ordination by means of hormones. The chief features of recent research have been firstly, the recognition of the anterior pituitary body, hitherto an organ little understood, as the control centre of the endocrine system; and, secondly, the isolation, characterization, and in some cases partial synthesis, of the substances produced by the glands controlled by the anterior pituitary body. The manifold effects of removal of the pituitary have long been known, but full appreciation of their significance was delayed. Following hypophysectomy (surgical removal of the pituitary body) there are marked changes in the thyroid and adrenal glands, and in the ovaries or testis, as well as in carbohydrate metabolism, blood chemistry, and rate of growth. These effects of hypophysectomy can be wholly or partially abolished by admin-



istration of extracts of the anterior pituitary which will stimulate the thyroid and adrenal glands to increased physiological activity. Not only is the internal secretion of the gonads stimulated, but also the maturation of ova and spermatozoa. It is customary to refer to these various activities of the anterior pituitary as thyrotropic, adrenotropic, and gonadotropic. The gonadotropic effect is probably brought about by more than one substance—by as many as three according to certain authors. Similarly, extracts can be made of the anterior pituitary body which will restore growth in the hypophysectomized animal, or increase the growth of the immature animal. The effect on carbohydrate metabolism is shown by the capacity of extracts of the anterior pituitary to raise the blood sugar and to decrease the sensitivity of the animal to insulin. In certain cases, the full diabetogenic effect—namely excretion of sugar and ketones in the urine—may be observed. The pituitary substances responsible for these manifold effects have not yet been isolated or identified, but they are undoubtedly protein-like in nature, and their chemical properties contrast strongly with those of the hormones secreted by the adrenals and gonads. Thus, they are destroyed by heat in the presence of water; they are insoluble in organic fat solvents, but soluble in water; and they are stable in mild acids and alkalis. The adrenotropic, thyrotropic, and gonadotropic hormones are distinguished by the fact that they act upon a second gland, which is thereby stimulated to secrete hormones to effect the characteristic changes in the end-organ. Another pituitary hormone, however, whose existence is well established, acts directly upon the end-organ. This is the hormone responsible for causing the secretion of milk by the mammary gland, and in pigeons for the thickening of the glandular crop lining responsible for the production of pigeon's "milk."

**Adrenal Cortex.**—It has been established for some time that removal of the adrenals is incompatible with continued survival of the animal, and, further, that this lethal effect is due, not to the removal of the adrenalin-bearing medulla, but to the removal of the cortex of the gland. The symptoms preceding death caused by adrenalectomy seemed to be due largely, if not exclusively, to the disturbance of the metabolism of salt and water. The lethal action of adrenalectomy is so definite that extracts of the cortex can be tested biologically for their power to promote survival, but the minute amounts of active substance present in the gland have made the concentration and purification of extracts a laborious affair. Nevertheless, among the large number of crystalline compounds separated from cortical extracts by Reichstein, there seems to be at least one which has the full survival-promoting power of cortical extracts. It is certain that the constitution of this substance, corticosterone, will shortly be ascertained, and already a semi-synthetic product, having one-third of its biological activity, has been produced from the hormone of the corpus luteum (*see below*). Recent research on the adrenals has also led to the discovery that they contain relatively large amounts of substances similar in biological activity to the gonadal hormones, and this provides a link with the clinical observation that tumours of the adrenal cortex may lead to the appearance of masculinity in women and femininity in men.

**Testis.**—The well-known effects of castration indicate that the testis has a vital influence upon the accessory male organs of reproduction and upon secondary sexual and other bodily characters. Only recently, however, have extracts of testis been prepared capable of replacing in the castrated animal the endocrine activity of the intact organ. Koch and Gallagher were able to produce from bull testis a concentrated extract capable of causing growth of the atrophic comb of the castrated cock or capon, the most convenient test available. They were subsequently able to elaborate a number of tests on the castrated rat and to effect

a quantitative standardization of extracts. The proportion of active material present in the tissue was again minute, and not until 1935 was the essential hormone of the testis, now known as testosterone, isolated from testis extracts by Laqueur and his co-workers and chemically characterized. In the meantime, Butenandt, working on the discovery that extracts with similar activity could be prepared from male urine, had produced from that source a crystalline substance with biological properties similar to those shown by testis extracts. The name androsterone was applied to this substance, since at that time it was supposed to be the essential male hormone. The chemical constitution suggested for this substance by Butenandt was confirmed by Ruszicka in the course of a brilliant piece of work, in which androsterone was prepared artificially from cholesterol. A somewhat similar technique was subsequently used for the artificial preparation of testosterone from cholesterol, and what appears to be the essential hormone of the testis is now available in large quantities. Both androsterone and testosterone are *cyclopentenophenanthrene* derivatives. Androsterone is fully saturated, and has a hydroxyl group in position 3 and a keto group in position 17. Testosterone has one double bond ( $\Delta^4$ ), and is a 3-keto, 17-hydroxy compound.

**Ovary.**—The early work of Allen and Doisy on the preparation of ovarian extracts was followed by Zondek and Aschheim's discovery that highly active extracts with similar biological properties could be prepared from the urine of pregnant women, and for a time the centre of interest shifted from the ovary. The high concentration and the comparative lack of inert material in pregnancy urine made possible a rapid advance in chemical methods of preparing active extracts, and in a short time two active substances had been isolated. These are now known as oestrone and oestriol. They are of somewhat similar constitution to the male hormone described above, but they contain a benzene ring and their artificial production has not yet been achieved. These substances were commonly supposed to represent the essential female hormone as it was actually secreted by the ovary, but further research by Doisy and his co-workers resulted in the isolation, from sows' ovaries, of a third substance now known as oestradiol. This substance, which is considerably more active than oestrone, had already been produced artificially by the partial hydrogenation of oestrone, but the claim of the chemist to have improved on nature was short-lived in view of oestradiol's ultimate isolation from the ovary. The substances described are responsible for only one phase of the female reproductive cycle, namely, for the changes associated with the time of maturation and ovulation of the Graafian follicle in the ovary. The second and no less important phase of the cycle comes after ovulation, when the corpus luteum develops from the shell of the ruptured follicle, and the uterus undergoes coincidental changes designed to facilitate the implantation of the fertilized egg. This second phase of the cycle was thought, from the evidence of functional correlation, to be under the control of a hormone produced by the corpus luteum, and experiments resulted in the production of extracts capable of inducing in the immature or ovariectomized animal suitably sensitized with oestrone the usual post-ovulation changes of the accessory organs. Small amounts of crystalline hormone were eventually produced from corpora lutea and its chemical characterization was effected. The name progesterone was agreed upon by the various workers concerned. The artificial production of this rare substance was afterwards achieved from stigmastanol—a steroid related to cholesterol—found in soya bean oil. Unlike the male and female hormones, progesterone does not seem to be excreted in the urine in an active form, but an inactive compound—pregnanediol—previously isolated from pregnancy urine, has now been recognized as the probable excretion



product of the hormone of the corpus luteum. This substance can be obtained in fair quantity from urine, and can be converted back to the active progesterone by a comparatively simple process.

**Integration of the Endocrine System.**—It is clear that the primary regulation of the system is due to the stimulating activity of the anterior pituitary body. It is equally evident that certain of the organs directly or indirectly controlled, particularly the ovary and uterus, must be able to exert an effect in their turn upon the anterior pituitary. Thus the implantation of a fertilized egg in the uterine endometrium is by some means effective in causing the persistence of the corpus luteum in the ovary, and this change in the ovary interrupts the pituitary cycle so as to bring about the endocrine conditions necessary for successful gestation. In the same way, inter-relationships exist, possibly directly between the thyroids, adrenals, and gonads. (A. S. PA.)

**England:** see GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF.

**English Literature.** It is but fitting that this survey of English literature during 1937 should, before anything else, pay the brief tribute of a mention to some of those writers who have for ever laid down their pens. It has been necessary to record during the year the deaths of Sir James Barrie, John Drinkwater, Joseph Hocking, and Lieut.-Col. Cyril McNeile (more recognizable under his *nom-de-plume* of "Sapper"). Another, though not so direct a loss to English literature, was caused by the death of its great interpreter to the French, Professor Émile Legouis.

A notable little group of books is made up, entirely or in part, of the posthumously published work of three literary giants who died before the beginning of the year under review. Kipling's autobiographical *Something of Myself: For my Friends, Known and Unknown* was most accurately entitled by its author: "Something" is the operative word; yet enough is here to bring a measure of satisfaction to any but some of the most unilateral admirers of this many-sided genius. A few more poems to add to the published output of A. E. Housman are included in Laurence Housman's *A. E. H.*—not, as was in the nature of things, of the same water as the poems of the two great little volumes, but still precious enough. This book also contains some valuable letters by "A. E. H." In connection with G. K. Chesterton's *The Paradoxes of Mr. Pond*, it is, perhaps, permissible to express a sense of thankfulness that the master's reputation stood in no need of enhancement by this last of his books; yet how gladly would we read many more such books from that pen!

Before attempting anything in the nature of a systematic review of the various types of literature, mention should be made of one special type evoked by the coronation and its antecedent circumstances. It is a little incongruous that the most noteworthy of the books begotten of the coronation should owe its inclusion in this survey to its translation from the German by L. G. Wickham Legg; but it is generally acknowledged that Dr. P. E. Schramm's *History of the English Coronation* was bettered by no native Englishman's book upon the subject, though there is evidence of documentary research in J. G. Noppen's *Royal Westminster*. Hector Bolitho's biographies of *Edward VIII* and *George VI* may be mentioned here, as also may be, and without comment, Geoffrey Dennis's *Coronation Commentary*. The centenary of Queen Victoria's accession had also its own literature, among which Margaret Lambert's *When Victoria Began to Reign* may be singled out.

One of the most significant indications of the general trends of English literature in these days lies in the fact that in no survey can pride of place be given to poetry. There are still,

and it is to be hoped that there will always be, poets and experimenters in verse forms; but it has to be admitted that they occupy the attention of only a fraction of the reading public. The stream of fiction, good, bad, and indifferent, continues in full flood; but it is the large and varied output of works of biography, reminiscence, and travel that is most characteristic of the country's literature.

Of the considerable number of autobiographies published during the year, Kipling's has already been mentioned. It is fitting that a word or two should be written of Barrie's *The Greenwood Hat*. Much of this little book is autobiographical, sharing with the reader, pleasantly but all too briefly, its author's reminiscences. Filial piety, together with personal recollections of middle-class life in late Victorian London, are finely embodied in Herbert Asquith's *Moments of Memory*; and in *As I Was Going Down Sackville Street*, Oliver St. John Gogarty produced a work on the same high plane of scholarship. Among other memorable books of personal reminiscences were *Georgian Adventure*, by Douglas Jerrold, the Duke of Portland's most readable *Men, Women, and Things*, and J. B. Booth's *A Pink 'Un Remembers*, which must bring a sigh of regret from those who were in their prime vigour in the London of the opening years of the present century. It is, indeed, difficult to know where to stop in recalling the year's output in this class of literature: the field was entered by, among others, such stalwarts as H. A. Vachell, S. P. B. Mais, and Noel Coward. But it is necessary to mention two remarkable books which, though not autobiographies, are based on their authors' personal reminiscences: Harold Nicolson's life of Lord Dufferin, *Helen's Tower*, and V. Sackville-West's *Pepita*, a life of her mother and grandmother which convincingly illustrates the truth of the adage that "Truth is stranger than fiction." More directly autobiographical are Jack Jones's *Unfinished Journey*, G. A. W. Tomlinson's *Coal Miner*, and Andrew Smith's *I Was a Soviet Worker*, all of which, written by working men, have considerable literary as well as sociological value. Another book which may fittingly be mentioned here is *Coming, Sir!*, in which its author, Dave Marlowe, relates his experiences as a waiter.

One of the great figures of the year, Lord Baldwin, found a biographer in Arthur Bryant. There was, also, an interesting group of biographies of men who are still within living memory. A prominent place among these must be accorded to Professor G. M. Trevelyan's peacefully and nobly written *Grey of Fallodon*, and to Sir Frederick Maurice's minutely thorough first volume of his *Haldane*. Winston Churchill's *Great Contemporaries* has that quality of brilliance which must be expected from its author, and a stirring story is told in Frank O'Connor's life of Michael Collins, *The Big Fellow*. Labours of love were faithfully performed by John Eglinton in *A Memoir of A. E.* and by M. Tschiffely in *Don Roberto*, a portrait of R. B. Cunninghame Graham; and, in this connection, it is right to call attention once more to Laurence Housman's *A. E. H.*

Although the book is not strictly a biography, it is permissible to mention here Humphrey House's editing of *The Notebooks and Papers of Gerard Manley Hopkins*.

There was a very large number of biographies of characters belonging to the more distant past, among them being *John Knox* by Lord Eustace Percy, Algernon Cecil's *A Portrait of Thomas More*, Cyril Hughes Hartmann's *Clifford of the Cabal*, A. L. Rowse's *Sir Richard Grenville of the Revenge*, Sir Charles Petrie's strongly written *Bolingbroke*, and D. M. Low's *Edward Gibbon*. An interesting, if fortuitous, occurrence was the publication in the same year of Maurice Ashley's *Oliver Cromwell*, *The Conservative Dictator*, and of *King Charles and the Conspirators*, by Esmé Wingfield-Stratford. The first Roman emperor was the subject of two historical studies: *Augustus* by John Buchan, and G. P.



Baker's *Augustus, "The Golden Age of Rome."*

Dr. G. B. Harrison's Elizabethan scholarship was seen in his *Life and Death of Robert Devereux, Earl of Essex*.

Biography and history shade into each other in *The Amberley Papers: The Letters and Diaries of Lord and Lady Amberley*, edited by Bertrand and Patricia Russell. This book may not have a very wide appeal, but it is of immense interest to the student of the psychological tendencies at work during the '50s and '60s of the last century. Equally interesting on a rather different spiritual plane is Dilys Powell's translation of *The Private Letters of Princess Lieven to Prince Metternich, 1820-1826*. A delightful contribution to our knowledge of 17th-century England is made by Gladys Scott Thomson's *Life in a Noble Household*, in which the first Duke of Bedford and his family come to life again through their domestic accounts.

It is impossible to leave this field of biography without reference to so notable an occurrence as the publication of another supplementary volume to the *Dictionary of National Biography*. This, which includes those who died in the period 1922-30, is particularly rich in its material.

This is, perhaps, the most appropriate point at which to turn to purely historical and political works; and, taking first some books of contemporary interest, we find Capt. B. H. Liddell Hart analysing with all his wonted acumen a situation aptly described by his title *Europe in Arms*. Born of Spain's agony are Professor E. Allison Peers's *Catalonia Infelix* and Martin Armstrong's *Spanish Circus*. But it would be too invidious a task to attempt a selection from the group of books concerned with the rival political ideologies so much before the public mind at the present time; and for this very reason there is all the more cause to refer to Lionel Curtis's brave attempt, in the final volume of *Civitas Dei*, to suggest what things ought to be but are not.

To the vast majority of readers, literature means fiction; and, whatever may be thought of their quality, there was no noticeable falling off in the number of novels published during the year. One of the most successful novels of the year was Francis Brett Young's *They Seek a Country*, and another was Dr. A. J. Cronin's onslaught upon the modern medicine-man in his less laudable manifestations, *The Citadel*, written with obvious sincerity tempered by the necessary degree of artistic restraint. Storm Jameson's *The Moon is Making* is less derivative than the greater part of nearly all novelists' work. Those who like a rousing sea-story were well served by H. M. Tomlinson with his *All Hands*. H. G. Wells has been as prolific as ever, and those many who find more to delight them in his early than in his later work will have been gratefully surprised to find something, at least, of the old spirit recaptured in *Brynhild* and *Star-Begotten*.

Others of the old brigade who served their public faithfully were Sir Hugh Walpole with his fairy tale, *John Cornelius*, Compton Mackenzie with two huge instalments of *The Four Winds of Love*, Frank Swinnerton with *Harvest Comedy*, H. A. Vachell with *The Golden House*, Somerset Maugham with *Theatre*, Gilbert Frankau with *The Dangerous Years*, Robert Hichens with *Daniel Airlie*, Eden Phillpotts with *Farce in Three Acts*, Michael Sadleir with *These Foolish Things*, and Richard Aldington with *Very Heaven*; and this is very far from exhausting the list of established favourites.

*The Years*, by Mrs. Virginia Woolf, must be reckoned one of the year's successes: its outlines lack something in definition, but it has much of the stuff that dreams—nice dreams—are made on. In a year in which the subject of divorce was in the foreground of discussion, Miss E. M. Delafield's *Nothing is Safe* came appropriately enough with its reminder, if such were necessary, that there may be other parties concerned, younger and even more vulnerable than the most patently innocent principal. Miss Helen Simpson's

*Under Capricorn* belongs, properly speaking to Australian literature. The unflagging Mrs. Beatrice Kean Seymour gave us further proof of how well she understands her own sex in *The Happier Eden*. There was originality and vividness in Miss Margaret Lane's *At Last the Island*.

Some of the best of the year's historical novels were written by women, among them being *No Hearts to Break* by Miss Susan Ertz, and Mrs. Hicks Beach's *A Cardinal of the Medici*. Other romances in this category include David Pilgrim's *So Great a Man*, with Napoleon for its theme, and *The Lost King* by that inveterate story-teller in this kind, Rafael Sabatini.

All those to whom A. Neil Lyons's *Arthur's* has been a cherished classic for some 30 years must have been overjoyed to find this writer reproducing so much of the genius of that immortal collection in *Tom, Dick, and Harriet*. This was one of the most remarkable "comebacks" of a year which had also its due share of successful new-comers. *The Wild Goose Chase* by Rex Warner, and Geoffrey Household's *The Third Hour* were first novels in which critics discerned a more than ephemeral promise; and there were other books whose authors may well be congratulated upon a successful first plunge into the treacherous seas of fiction: Olivia Manning's *The Wind Changes*, C. P. Rodocanachi's *No Innocent Abroad*, Frances Harris's *Fain Would I Change*, and Fanny Jocelyn's *And the Stars Laughed* are little more than a random choice, the justice of which, as always in such cases, may well be outweighed by the injustices of its omissions.

It cannot be disguised that these are lean years for poetry in English literature, and the year under review is no exception in this respect. It might well be contended that the handful of final gleanings from A. E. Housman's previously unpublished work was poetically at least the equal of any other work published during the year. Nothing came from the pen of W. B. Yeats, the one indisputably major poet remaining with us. But much was done to rescue the year from utter mediocrity by the poet laureate, for the poetry of true patriotism, well attuned to public thought in a year of national emotion, informs the 42 poems of Mr. Masefield's *The Country Scene*. After the laureate, it is fitting to refer to W. H. Auden, who in 1937 was awarded the King's Gold Medal for poetry. This author's most interesting and most successful publication during the year was written in collaboration with Louis MacNeice, and is by no means exclusively poetical; for *Letters from Iceland* is a medley of all sorts of writing, for the most part satirical without being too spleenful. Mr. Auden also published a poem, *Spain*, in which his political sympathies have not entirely extinguished the poet. Two volumes of *Collected Poems* appeared during the year: one, under that title, by Laurence Housman, and John Drinkwater's *Collected Poems, Volume III*. Richard Aldington put at least some genuine poetry into his *The Crystal World*.

Two frankly communist young poets, Charles Madge and Rex Warner, the former in *The Disappearing Castle* and the latter in *Poems*, showed that they are at times not incapable of poetical thought and expression. *Straight or Curly?* by Clifford Dymont was welcome to ears attuned to an older convention of verse form.

The radio as a medium for verse drama was the direct begetter of Archibald MacLeish's *The Fall of the City*, a most interesting experiment in a new form, with which it is to be hoped that its author will persist. Of well-established writers, we have Edmund Blunden's *An Elegy*, and Humbert Wolfe's vitriolic *Don J. Ewan*.

In belles-lettres and criticism there was during the year a wide range, if the total quantity was not great. Works of general poetic criticism included D. G. James's *Scepticism and Poetry*; Rostrevor Hamilton's *Poetry and Contemplation*, and *Illusion and Reality* by "Christopher Caudwell"—a *nom-de-plume* which veils the identity of Christopher St. John Sprigg, who died during the



## ENTOMOLOGY

year fighting for the Government cause in Spain. Further light has been shed upon the lives of one or two of the great writers of the past, and this is especially true in the case of Keats; for there were published during the year not only F. Edgcumbe's editing of *The Letters of Fanny Brawne to Fanny Keats*, but also Marie Adami's *Fanny Keats*. The former of these books did anything that was still needed in the matter of dispelling the old misconceptions concerning Fanny Brawne.

Reference may here be made to Townsend Scudder's *The Lonely Wayfaring Man*, a study of Emerson, to the further instalment of E. de Selincourt's edition of *Wordsworth Letters*, to James Sutherland's *Defoe*, and finally, once again, to Laurence Housman's *A. E. H.* Edward Garnett provided an introductory essay to his *Conrad's Prefaces to his Works*; and volumes of essays were produced by G. M. Young in *Daylight and Campaign*, by E. V. Lucas in *All of a Piece*, and by Lord Hewart in *Not Without Prejudice*.

A consideration of the literature of Science brings immediately to mind the loss sustained by the death of Lord Rutherford, whose intriguing little book *The Newer Alchemy* records the seemingly incredible in a matter-of-fact manner. (J. D. C.)

**Entomology.** Nearly 500,000 species of insects are now known and hundreds of thousands of additional species are yet to be discovered. These tiny animals are found in all countries, under all variety of climatic conditions from the tropics to the arctics. Some attack man directly, others transmit the organisms of human diseases, while many attack all kinds of fruits, grains, forage crops, stored foods and even the dwellings man constructs for his shelter.

The following brief discussion is intended to give a general view of some of the principal points at which these tiny, virile animals impinged on the lives and activities of men during the year 1937.

**Injurious Insects of the Past Year.**—Many species of insects have been distributed through the activities of commerce, around the world. Through their ability to adapt themselves to all sorts of conditions, they have become established in many countries, have multiplied enormously and have become very injurious. The common cotton bollworm moth, *Heliothis (armigera) obsoleta*, is found from the East Indies and Australia to Japan, India, Europe and North and South America. The larva attacks cotton, corn, tomatoes, tobacco and many other plants. It is always injurious and in the past year was markedly so in certain cotton-producing countries of the world. Another small, dark, grayish-brown moth, *Pectinophora gossypiella*, is present throughout cotton-growing countries, Egypt, India, Africa, Brazil, Mexico and in portions of the south-western United States. Its larva, the pink cotton bollworm (weevil), attacks the flowers and bolls of the cotton plant, and during the past year it was actively injurious.

The armyworm, *Cirphis unipuncta*, is also cosmopolitan for it occurs in Australia, New Zealand, China, India, Europe and in South and North America. The greenish striped caterpillars often become enormously abundant and march gregariously over the ground in search of fresh food—corn, oats, barley and other grains and grasses. Outbreaks of the insect, especially in the United States, occurred in 1937. The San José scale *Aonidiella (Aspidiotus) perniciosus*, a native insect of China, has spread around the world and has proved to be a most pernicious enemy of the peach, plum, pear, currant, and apple. It was a serious pest to the foregoing fruits in many localities during the past year.

The corn (maize) borer, *Pyrausta nubilalis*, ranges from Guam and the Philippines to Japan, through all of Asia, central and southern Europe and northern Africa to America (U.S.). It attacks corn, millet, sorghum, hemp, hops and other plants. It was



TRENCH USED in combatting a destructive farm pest, crickets

active during the year in Japan and China and persistently extended its territory and injuries in the United States and Canada. The gipsy moth, *Porthetria dispar*, present throughout Europe, western Asia, northern Africa, and quite certainly in Japan and China, periodically defoliates large areas of deciduous trees in Europe and caused severe defoliation in the north-eastern United States during the past year.

Termites, distributed around the world in tropical and temperate regions, have been destructive to ties, mine props, telephone and telegraph poles, bridges and wooden structures of all kinds, especially the dwelling houses of man. *Reticulitermes flavipes* in the eastern United States and in certain regions along the Mediterranean, *R. hesperus* and *R. tibialis* in the western United States, and other species in Central and South America, in South Africa and in Asia have been increasingly destructive.

**Notable Fruit Insects of the Year.**—All fruits are subject to the attacks of insects. A list of 275 species of insects attacking the vine has been compiled. The apple serves as host to several hundred species of insects although not all are injurious. That serious enemy of fruits, the San José scale, has already been mentioned.

The grape phylloxera, *Phylloxera (vastatrix) vitifoliae*, a member of the family of aphids or plant lice, is of nearly world-wide distribution. It is, undoubtedly, a native parasite of the wild grape of the United States. It is especially destructive to the European type of grape. French authorities have spoken of its introduction into France as follows: *Le désastre phylloxérique fut sans précédent dans les annales du monde agricole*. It was



a major pest of the grape in Europe and in California during the past year.

The red scale, *Aonidiella aurantii*, has become distributed throughout the tropical and semitropical regions of the world and in many regions, especially in South Africa and the western United States, constituted one of the chief troubles of the grower of citrus fruits of the year. The codling moth, *Carpocapsa pomonella*, a major pest of apples, is found in all of the apple regions of the world. The larva, which also attacks the pear, quince, and English or Persian walnut, took its annual toll during the year in South Africa, the United States and Canada and was severe in England.

The flies of the family, *Trypetidae*, known as fruit-flies are cosmopolitan and among the worst pests of fruits in many countries. The Mediterranean fruit-fly, *Ceratitis capitata*, is present on every continent except North America although it occurs in nearby Bermuda. It caused serious injury in various parts of its range to a wide variety of fruits, especially citrus fruits, peaches, apricots and figs. The olive fly, *Dacus oleae*, is also a most injurious species. In Italy and Spain it caused great losses to the olive industry.

In the United States, the apple maggot, *Rhagoletis pomonella*, and the cherry maggots, *R. cingulata* and *R. fausta*, were the important members of the fruit-fly group during the year. The Mexican fruit-fly, *Anastrepha ludens*, which attacks grapefruit and oranges and other fruits, has entered the lower Rio Grande valley in the United States.

**Locusts or Grasshoppers.**—Among the greatest insect scourges of all time have been the enormous swarms of locusts sweeping across vast areas and destroying all vegetation in their paths. In parts of Russia, western Asia, Egyptian Sudan, South Africa, Argentine and the west-central United States and in portions of Canada, locusts are, at the present day, among the most destructive insects with which the people have to contend. The chief migratory locusts of the Old World comprise two species, *Locusta migratoria* and *Locustana pardalina*. The former occurs from



A "DOZER," consisting of a screen and a trough of kerosene, drawn over fields to trap and drown grasshoppers in the Great Plains, U.S., worst plague of the insects since 1880

western Europe eastward through Asia and Northern and Central Africa to the Philippines. Serious trouble from it occurs somewhere in this vast area every year.

In South Africa there are four species of migratory locusts, the brown locust, *Locustana pardalina*, the red locust, *Nomadacris septemfasciata*, the tropical migratory locust, *Locusta migratoria migratorioides* and the desert locust, *Schistocerca gregaria*, which once constituted one of the Biblical Plagues of Egypt. Even today it swarms and "devastates crops in North and East Africa and Asia Minor." Both the brown and red locusts were destructive in South Africa in 1934, '35 and '36 and an outbreak of the red locust was expected in 1937.

In parts of United States and Canada, grasshoppers were destructive during 1936 and, on the whole, were worse in 1937. Four species were concerned in the States of North and South Dakota, Nebraska, Kansas and some neighbouring States. These were the lesser migratory locust, *Melanoplus mexicana*, the differential grasshopper, *Melanoplus differentialis*, the two-striped grasshopper, *Melanoplus bivittatus*, and the red-legged locust, *Melanoplus femurrubrum*.

**Chief Stored Grain Insects of the Year.**—The many insects infesting stored grains and dried foods have been carried around the world with the materials in which they live. They were active everywhere and caused great losses during the year. The saw-toothed grain beetle, *Oryzaephilus surinamensis*, reddish-brown and about 2.5mm (1/10in.) in length, has spread over the earth. It infests meal, flour, breakfast cereals, and occasionally cornstarch, ginger, macaroni, and dried fruits.

The pinkish-white larva of the Mediterranean flour moth, *Ephestia kuehniella*, infest flour mills and often find their way into homes in packages of flour and cereals. The cosmopolitan Indian meal-moth, *Plodia interpunctella*, feeds on grains of all kinds and often invades households in oatmeal, graham biscuits, raisins, dried currants, apples and peaches and in other fruits. The fig moth, *Ephestia cautella*, infests dried figs throughout the world.

The granary weevil, *Sitophilus granaria*, and the rice weevil, *Sitophilus oryzae*, two tiny blackish beetles, are among the most destructive insects in the world. They are cosmopolitan and are injurious to stored wheat, corn, barley, rice and other grains. They often enter households in packages of cereals.

**Insect Carriers of the Organisms of Human Diseases.**—Within the last few decades, remarkable discoveries have been made regarding the intimate relation of certain insects to some of the most virulent diseases of mankind.

Malaria, the most universal and devastating disease of man-



BOLL WORM attacking nearly full-grown cotton boll



kind, is disseminated by various mosquitoes of the genus, *Anopheles*. *A. maculipennis*, *A. ludlowii*, *A. quadrimaculatus*, and *A. albimanus*, may be considered the chief world offenders in perpetuating malaria. Thousands, nay millions of people in the Philippines, India, southern Europe, South and Central America and the southern United States suffered from this disease during the year and a large proportion of them died from the attacks.

In the eastern United States there appeared during the year a veritable epidemic of the common dog flea. This flea is not greatly to be feared although it may infect children with an intestinal tapeworm. It is the rat flea, *Xenopsylla cheopis*, that man needs to fear for it is a carrier of *Bacillus pestis*, the cause of Plague, one of the great scourges of mankind. China experienced an outbreak of the Plague during the early stages of the Sino-Japanese war.

The housefly is the greatest insect distributor of germs. It carries the organisms of typhoid fever, dysentery and cholera and, undoubtedly, was responsible for much illness and many deaths during the year. Typhus fever which takes its annual toll of human lives among the poor, half-starved peasants of south-eastern Europe and of Russia, is transmitted through the agency of the body and head lice of man.

Yellow fever, carried by the tiny mosquito, *Aedes aegypti*, although banished from North America, still rages in portions of Central and West Africa.

**Insects as Destroyers of Their Own Kind.**—It is an interesting fact that man has domesticated but two insects out of the existing thousands of species, the docile, harmless silkworm and the fiery honeybee. The lac insect, *Tachardia lacca*, not strictly domesticated, is reared on a large scale in India.

Investigation has shown that nearly, if not quite all, insects are preyed upon by members of their own tribe and kind. Hundreds,

nay thousands, of species of tiny wasp-like parasites are constant and deadly enemies of larger insects. Many predacious beetles, dragon-flies, robber-flies, and other tigerish forms are ever hunting out and devouring their kind.

Man has taken advantage of his knowledge regarding the destructive work of these parasitic and predacious forms and is slowly learning how to propagate them in quantity and to distribute them where they will attack and destroy the pests which are ravaging his crops. This work in the utilization of insects as destroyers of their own kind has been carried on during 1937 more methodically, intensively and intelligently than ever before, in Canada, the United States, England, France, Italy and Germany. (See MALARIA.)

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**E.P.I.C.:** see SHARE-THE-WEALTH PROGRAM.

**Epidemics.** Each year finds the bulwark, which medical science has erected against disease, increasing in efficiency. Particularly successful have been efforts to control epidemics. In 1937, extensive community programs for the control of pneumonia were formulated in several States and cities. Further knowledge concerning the various types of pneumococci was obtained; antisera for specific types of pneumococci were developed. Horsfall and others claimed that rabbit serum might be superior to horse serum because of cheaper production, greater penetration, and less severe reactions. Nevertheless, antipneumococcic horse serum, as first advocated by the Rockefeller institute, continued to be widely employed.

The attention of the public was focused on syphilis by the activities of the U.S. Public Health Service, under the able direction of Dr. Thomas Parran. The attention of the medical profession was called to the need of better control of venereal diseases through the activities of Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, by his book on syphilis, through lectures, and by means of a motion picture prepared under his direction by the U.S. Public Health Service and the American Medical Association. During 1937, increasing knowledge of virus and virus diseases was obtained. Francis and others recovered a human influenzal virus from patients. Stokes and others showed the effectiveness of vaccination with human influenzal virus against an approaching epidemic.

The effectiveness of the administration of sulphanilamide, especially in Beta haemolytic streptococci infections, as well as its efficiency in meningococcus, gonococcus, and other infections, led the editor of the *Journal of the American Medical Association* to term it one of the greatest medical discoveries of 1936. In 1937, better knowledge of the manner in which sulphanilamide could be employed to increase its effectiveness led to the formulation of rules to prevent unnecessary reactions from its use.

With increasing travel from one part of the world to another, particularly in aeroplanes, new problems in the control of epidemic diseases have arisen. Diseases, which formerly were limited to one section of the world, are now brought close to parts where they were formerly unknown. There is danger of the spread of yellow fever to North America, by aeroplane. Certification of the origin of passengers and the fumigation of aeroplanes has been instituted. Smallpox may be brought by infected individuals from one country to another by aeroplane. Therefore, vaccination against smallpox, of all flying personnel is also being carried out.

New routes, for the administration of vaccines, have been constantly sought. A number of investigations of the intra-nasal route have been made. Jensen of Denmark gave intra-nasal instil-



ALL THAT GRASSHOPPERS LEFT of a Nebraska cornfield, and part of an estimated minimum loss of \$80,000,000 inflicted by a plague of the insects in the Great Plains, United States



lations of toxoid, following a one-treatment hypodermic injection of toxoid, and found 96% of the individuals so treated were protected against diphtheria, as shown by the Schick test. Definite evidence has been presented, showing that there is a marked increase in the incidence of trichinosis. It is beginning, therefore, to be recognized as a public health problem, requiring the institution of effective measures for controlling it.

Another important advance in the control of epidemics in 1937, was the demonstration of the effectiveness of a vaccine prepared by the Pasteur institute in the control of bubonic plague in Madagascar. Animals infected with *B. pestis* were found in Utah and neighbouring States, showing the desirability of search in other States for plague-infested animals and fleas. (H. Bu.)

**Episcopal Church:** see PROTESTANT EPISCOPAL CHURCH.

**Eritrea**, an Italian colony, now forming part of Italian East Africa, covering about 46,000 sq.mi., bounded N. and E. by the Anglo-Egyptian Sudan, S. by Ethiopia, and having a long coast-line (670mi.) on the Red sea; pop., Italians, 4,200; other Europeans, 370; natives, 596,000. Asmara is the capital, Massawah the chief port, and in April 1937 it was announced that a new port was to be built at Assab, at a cost of 80,000,000 lire. The natives, apart from a few Coptic Abyssinians, are Mohammedan; education is in the hands of the rigorously State-controlled Roman Catholic missions.

Agriculture and stock-raising are the chief industries but the country has never been self-supporting, and most of the Italian colonists are labourers imported at high wages for purposes of exploitation. In Nov. 1937, Marshal Traziani, their viceroy, stated that the finances were "on a fictitious footing"; and whereas the imports from Italy for the first three months of that year amounted to 345,900,000 lire (a vast increase), chiefly in cotton textiles, wine, tobacco, and foodstuffs, exports to Italy from the whole of Italian East Africa were only 51,900,000 lire.

Budget estimates for 1935-36 were: revenue, 144,059,004 lire, including a State contribution of 116,290,000 lire; expenditure (civil and military) balanced at this figure.

**Ernle, Rowland Edmund Prothero**, 1ST BARON (1851-1937), British agriculturist and writer was born in Clifton-on-Teme, Sept. 6, 1851. A biographical notice of him appears in the *Encyclopædia Britannica*, Vol. 8, p. 694. His work as minister of agriculture from 1916 to 1919, when he materially increased the home production of food, earned him a place in politics at least as high as that to which his writings entitled him in the world of letters. Lord Ernle took little part in public life after his retirement. He was president of the English Association, 1921-22, and of the Marylebone Cricket Club, 1924-25. Among the honours he received was the M.V.O. in 1901, and the gold medal of the Royal Agricultural Society in 1935; and the Grand Cross of the Greek Order of the Redeemer was also conferred upon him. His last considerable publication was *The Light Reading of Our Ancestors: Chapters in the Growth of the English Novel* (1927). He died at Wantage, Berks, July 1, 1937. On his death the peerage became extinct.

**Estonia**, republic of north-central Europe, N. of Latvia, member of the League of Nations. Capital, Tallinn (Reval) (seaport; 140,000). Pro-president, Konstantin Päts (appointed 1933). National flag, blue, black, and white horizontal stripes.

**Area, Population, and Cities.**—Area: 18,353 sq.mi., divided into 11 districts; population (1934): 1,126,413 (five-sixths Lutheran, though there is no State religion); 88.2% are Estonian,

8.2% Russian. Towns (1935): Tartu, 59,000; Narva, 24,000; Pärnu (seaport), 21,000.

Education figures: (1934-35) 1,246 elementary schools (obligatory and free); 62 middle schools; (1936) in Tartu (Dorpat) State university, 3,052 students.

**History, Trade, Finance, and Defence.**—A virtual dictatorship has prevailed since prorogation of the Diet (1934). A new constitution (the third; drafted in August) provided for: election of president for six years (universal suffrage; secret ballot); election of two chambers (29; 40) for five years; president's wide rights of veto; individual liberty and freedom of conscience. A sterilization law became applicable (April) to mental and physical defectives (not under 10 years, and with other reservations).

Farming supports 70% of the population; butter and poultry are exported. Nevertheless, industrialization is making strides (textiles, paper, oil, flax, leather); there is no unemployment, but a shortage of farm labour. Imports (1936); 86,846,000 kroons (£4,825,000); exports: 83,191,000 (£4,622,000); Great Britain takes two-fifths.

Currency unit: Estonian kroon (at par, 18.16 kroons = £1 = \$4.87). Budget (1936-37 estimate): 88,646,000 kroons. Notes (Bank of Estonia, three-quarters covered) 43,057,000 kroons.

Army (conscript; 1 year's service with colours) 1,313 officers, 9,310 others; 68 aeroplanes; navy: 1 torpedo boat, 4 gunboats, etc.—2 submarines are being built in England.

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**Etching.** A survey of etching during 1937 reveals a continued development along the geographical lines followed in recent times. On the continent of Europe, France, after the golden era of the 19th century and since the death of such masters as Forain and Lepère, is producing more important work in line-engraving, woodcut, and lithography, than in the bitten line, though Villon, Féau, Jacquemin, Guastalla, Hasegawa (Japanese), Berger, Alix, Segonzac, Le Riche, Calevaert-Brun, Camy, Laurencin, Derain, Matisse, Braque, Picasso (Spanish), and Chagall and Kandinsky (Russian), are carrying on the great tradition of French art. The International Exhibition at Paris afforded an excellent review of contemporary work.

In Italy, Mauroner, Disertori, Chiappelli, Bianchi-Barriviera, Lipinsky, Galuzzi, and Mazzoni-Zarini, are representative, while Polish graphic artists of today have devoted themselves to the block-print, with the etcher Zakrzewski as an exception. In Hungary, on the other hand, etching flourishes in the hands of Vadász, Varga, Weil, Patkó, Emánuel, Barcsay, Kaveczki, Zador, Beron, Uitz, Bartos, Buday, Bottyány, and Julius Komjáti who continues to produce beautiful and significant plates. The Austrian Plankh, the Bohemian Coubine, and the Rumanian Negulesco, are conspicuous figures among the etchers of their respective countries. In Czechoslovakia there are Vondrous, Švabinský, Šimon, Stretti-Zamponi, Silovský, Boudà, Alex, and Stretti.

Holland and Belgium are carrying on their rich traditions of the past, the latter country comprehensively represented in the recent exhibition of Belgian graphic art at Brighton, England. Bagdatopoulos and George Constant, Greeks by birth but living in the United States, have worked on the copper, while Mukul Dey is India's exponent of the etching medium.

The modern German school continues with little change, though in the death of Max Liebermann it lost one of its most distinguished members. Kaethe Kollwitz and Otto Dix, however, remain and, in addition, are Beckmann, the sculptor Kolbe, Karsch, Kleinschmidt, Marcks, Heckel, Hofer, Sintenis, Nolde, and Gruner. Feininger, Edzard, and Roesch, are living in the United States and Kirchner in Switzerland. In Sweden, too, there is an independent and well established school, less affected than might



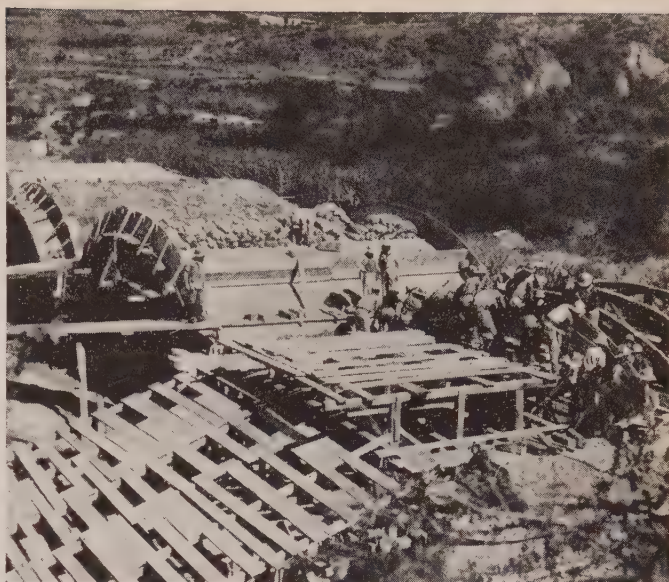
be supposed by the influence of Zorn. The internationally known Fridell died in 1936, but there remain Ahlquist, Borglind, Elgström, Engström, Fougstedt, Hedlund, Holmberg, Jansson, Johansson, Johanson-Thor, von Rosen, Sallberg, Sparre, Stallarholm, and Zanden. Their work is being shown throughout the United States in an exhibition of contemporary Swedish prints in return for a similar exhibition sent to Sweden by The Society of American Etchers early in 1937. Interesting work is also being done in Norway by Nordhagen and in Denmark by Stubbe and Christensen.

Artists in the United States share with Great Britain a greater activity in the field of etching than is taking place anywhere else in the world today, and the growing interest among laymen is demonstrated by the steadily increasing number of print societies and exhibitions. The Print Makers' Society of California, the Chicago Society of Etchers, and the Society of American Etchers are the three leading groups, although numerous others exist all over the country. Each sponsors an annual national and several travelling exhibitions, reflecting all the various influences which have manifested themselves in contemporary American print making. Any survey would include Butler, Chamberlain, R. Bishop, I. Bishop, Clark, Costigan, Ganso, Handforth (living in the Far East), Kappel, Landeck, M. Lewis, Lucioni, Marsh, Morgan, Nisbet, Rosenberg, Roth, G. Wright and R. S. Wright, Cook, Allen, Auerbach-Levy, Bacon, Berdanier, Brooks, Cadmus, Didur, Drury, Eby, Gallagher, Grant, Hall, Hansen, Heckman, Heintzelman, Higgins, Hoffman, Horter, Hutty, Kinney, Kloss, Kuniyoshi, Loggie, Margulies, McNulty, Nordfeldt, Ostrowsky, Partridge, Reynard, Ryder, Schaldach, Sloan, Smith, Sternberg, Sterner, Tittle, Tuttle, Vargish, Walkowitz, Washburn, S. M. Weber, Wickley, K. S. Williams, Woiceske, C. H. Woodbury, M. Young and C. J. Young, and A. C. Webb, Webster, and Orr (the three last named living in Paris). The veterans Benson, Marin, Wood, and Winkler, published nothing during the past year. Mexican graphic artists have devoted themselves largely to lithography, but Amero has etched some representative plates.

Tradition is strong in Great Britain, and etching there has been less affected by the so-called "modern" influence than is the case on the Continent and in the United States. The great Scotch triumvirate of Cameron, Bone, and McBey are still outstanding, though the first named published nothing in 1937. Nor did the well known Brockhurst, Blampied, Rushbury, and Lumsden publish anything though Griggs, Briscoe, and Hardie brought out beautiful plates. Others active were Airy, Brammer, Buckton, Burridge, Cowern, Davis, Delleany, Drury, Fairclough, Fleming, Gross (identified with the French school), Holloway, Lack, Lindsay (an Australian), Nixon, Osborne, Pearsall, Smart, Spencer, Squirrel, Taylor, Thompson, Tod, and Wilson. The Royal Society of Painter-Etchers and Engravers, with an annual exhibition in London, is the principal English print organization. Barry and Taylor are representative Canadian etchers, where the Society of Canadian Painter-Etchers and Engravers has renewed its activity. (J. T. Ar.)

**Ethiopia**, an ancient East African empire, incorporated since 1936 by Italy as a part of Italian East Africa. The ruler is still, *de jure*, the emperor Haile Selassie; but the King of Italy has been recognized as emperor by the totalitarian States and some others (see ITALIAN EAST AFRICA), many having representatives in Rome accredited to the "King-Emperor." The Italian viceroy is the Duke of Aosta, who succeeded Marshal Graziani in Nov. 1937. Ethiopia remains nominally a member of the League of Nations.

Estimated area, 1,120,000 sq.mi.; the population was estimated by the Italians (1937) as 7,600,000. The capital is Addis Ababa.



A BRIDGE UNDER CONSTRUCTION on the road between Addis Ababa, capital of Ethiopia, and Asmara, capital of the Italian colony of Eritrea, in Italy's extensive African road-building program

The Abyssinians are Christians, belonging to the Coptic Church.

**History.**—Many Abyssinian notables submitted to the Italians on Jan. 10, 1937, and the armies under Ras Desta and Gabre Mariam were defeated on Jan. 25 and Feb. 23. Ras Desta and other Abyssinian leaders were executed. It is certain that hostilities were continuing up to November, when 5,000 Abyssinians were reported killed and Italian casualty lists were also published. The British chargé d'affaires left Addis Ababa on Jan. 15, and American consular representation terminated on March 31. In March, during a ceremony at Addis Ababa, bombs were thrown which severely wounded the viceroy, Marshal Graziani, and General Liotta. In consequence 2,000 arrests were made, many executions followed, and Italian workmen ran amok, fired huts, and massacred, it is said, some 6,000 inhabitants. Subsequently the viceroy ordered the expulsion of more than 200 Italians responsible for these reprisals.

**Trade and Communications.**—Exports of coffee and hides and skins, which in 1934 accounted for nine-tenths of the total exports, have come to an end owing to passive resistance of the natives. Miles of valuable coffee plantations and tracts of agricultural land have been left uncultivated for two years. The gold mines are being exploited, and the total production of Italian East Africa for 1937 was 917 pounds. A State undertaking, the East African Mining Company, with headquarters at Addis Ababa (Feb. 1937) is authorized to prospect for and work minerals, the State contributing £86,000 to £120,000 annually for three years. Germany is showing technical and financial interest in this undertaking, and there has been a German geological expedition.

The primitiveness of communications is the chief obstacle both to conquest and to exploitation. Traffic on the road from Asmara in Eritrea to Makale in Abyssinia is, according to one witness, still only possible at 6 mi. an hour. On Oct. 16, 1937 an "extraordinary" expenditure of about £32 millions was authorized by royal decree for roads in Africa; and some 125,000 workmen, of whom 75,000 are Italians, are employed on roads which are estimated to cost £16,100,000. Italian labour is on a two-year contract at wages of 33 to 55 lire a week. Wages continue to rise, and native labour demands proportionate pay. Roads to connect Addis Ababa, Harar, and Gondar with the Red sea are promised for 1939.

The cost of living, especially in the capital, is reported to be



prohibitive, in spite of efforts to control prices, which leave traders no margin of profit. The Branch of Mohammed Ali, an Indian firm of multiple shops, was closed down by order in March, 1937, but was subsequently allowed liquidation and sale to Italian interests. Trade with other countries than Italy has been practically strangled by numerous export and import restrictions, though on Dec. 30, a trade agreement (the details of which have not been divulged) was entered into with Japan, and, by a viceregal decree of Feb. 3, 1938, export of hides to foreign markets is to be encouraged and those exported to Italy restricted to a proportion of those sold elsewhere. Development of foreign trade is to be fostered for the sake of foreign currency and improvement of the trade balance.

**Banking and Finance.**—The Maria Teresa dollar has been supplanted by the paper lira. In Nov. 1937 the exchange rate was 10½ lire for one dollar, but dollars are practically unobtainable. The Bank of Ethiopia has been dissolved, the manager of the Bank of Italy in Addis Ababa acting as liquidator. A claim was made for securities held for the Bank of Ethiopia by the Bank of Egypt. (See also ARMIES OF THE WORLD; COPTIC CHURCH.)

**Eucharistic Congress, 33rd:** see PHILIPPINES, COMMONWEALTH OF THE: *History*; ROMAN CATHOLIC CHURCH: *Eucharistic Congress*.

**Europe.** The year 1936 was marked by a succession of grave events which threatened more than once to bring Europe to the verge of war: the re-occupation of the Rhineland by Germany in defiance of the Versailles and Locarno Treaties; the Italian conquest of Abyssinia and the collapse of the League of Nations' policy of sanctions; the outbreak of the Spanish civil war; and the formation of two opposing groups of which the Franco-Soviet Pact and the "Rome-Berlin axis" were the nuclei. The year 1937 in Europe was free from any dramatic crisis. The Spanish civil war dragged on inconclusively. But though no decisive improvement can be said to have occurred in relations between the leading European Powers, and though rearmament everywhere proceeded at a feverish rate, tension relaxed somewhat towards the end of the year. Several causes contributed to this relaxation. It became more apparent during 1937 that none of the great Powers, however ambitious and dissatisfied, was disposed for the present to go to the length of provoking a European war; the war in the Far East diverted attention to another and more urgent danger-spot; and Great Britain, by sending Viscount Halifax on a semi-official mission to Berlin in November, showed that she was still bent on a policy described by the British prime minister as "a general settlement of the grievances of the world without war."

**The Spanish Civil War.**—In the Spanish civil war, the insurgents improved their position by the conquest of the Basque districts in the north, and now hold some two-thirds of Spanish territory. But they have failed to dislodge the Government forces from Madrid or from the eastern provinces. In spite of the agreement which has been in force since Feb. 20, 1937, prohibiting the sending of foreign "volunteers" to Spain, both sides continue to enjoy substantial foreign aid in men and material, Italy having officially admitted the presence of 40,000 Italian troops with the insurgent forces. Meanwhile, the Non-Intervention Committee met at frequent intervals in London. In August, the British Government laid before it a scheme for providing for the withdrawal of foreign volunteers and the granting of belligerent rights to the insurgents. This scheme was still under discussion at the end of the year. (See SPAIN, CIVIL WAR IN.)

**The Mediterranean.**—Anglo-Italian relations, already seriously damaged by British leadership in the application of sanctions

and by Italy's bid for supremacy in the Mediterranean, further deteriorated in 1937. A "gentlemen's agreement" between Great Britain and Italy, signed on Jan. 2, by which both parties reaffirmed their intention to respect the *status quo* in the Mediterranean, did not remove British and French suspicion of possible territorial ambitions of Signor Mussolini in the western Mediterranean; and anti-British broadcasts in Arabic from Italian radio-stations were a serious annoyance to the British authorities in the Near East. In July and August, numerous attacks were made in the Mediterranean on neutral shipping by unknown submarines which were not unnaturally assumed to be Italian. The British and French Governments, in an agreement signed at Nyon on Sept. 10, decided to establish a naval patrol in the Mediterranean in which Italy was invited to join. From this moment, the submarine attacks ceased. (See MEDITERRANEAN, THE.)

**Germany and Italy.**—The close association between Germany and Italy was frequently emphasized by both sides during the year, notably on the occasion of Signor Mussolini's visit to Germany in September. In November, Italy acceded to the "Anti-Comintern Pact" concluded between Germany and Japan in the preceding year, and shortly afterwards gave notice of her withdrawal from the League of Nations. In Germany, intensive rearmament was mainly responsible for a decline in the standard of living; and it may well have been this decline which prompted Herr Hitler to raise once more, with repeated insistence, the German claim to the return of her former colonies.

**France.**—In France there were also signs of the financial strain of rearmament. In June, the Socialist Government of M. Blum was replaced by the Coalition Radical-Socialist Government of M. Chautemps, and a program of financial reconstruction launched, which involved a further devaluation of the franc and modifications in the 40-hour working week introduced by M. Blum.

**U.S.S.R.**—In the Soviet Union, the second five-year plan was brought to a successful conclusion, and the first elections under the new constitution were held on Dec. 12. These proved to be something of a farce. Only one candidate was nominated in each constituency, and received the votes of from 90 to 95% of the electorate. Meanwhile, the campaign against "Trotskyists" and "saboteurs" led to thousands of executions, and tens of thousands of arrests. In June, Marshal Tukhachevsky and seven other leading generals were executed on the charge of conspiring with Germany. These events have weakened the position of the Soviet Union as a European Power, and caused serious misgivings in France as to the value of the Franco-Soviet Pact. One result of them has been to make French foreign policy more exclusively dependent on Great Britain.

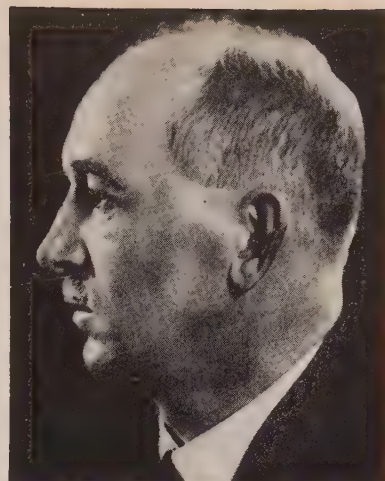
**Great Britain.**—In Great Britain, which in May celebrated the coronation of King George VI, the feature of the year was the immense rearmament program. In his speech to the assembly of the League of Nations in September, Mr. Eden stated that the aggregate tonnage of the principal types of warships then under construction for the British navy exceeded 450,000 tons, that the expansion and re-equipment of the air force were proceeding rapidly, and that there was a continuous growth in the production of armaments for all three fighting services.

**The Smaller Powers.**—The smaller European Powers, unable to compete effectively in the armament race and deprived of any hope in the protective virtue of "collective security," have pursued, almost without exception, a policy of cautious neutrality. In central Europe, Czechoslovakia alone relies on her alliances with France and the Soviet Union; and the grievances of her large German minority are the pretext, rather than the cause, of her bad relations with Germany. This policy finds little favour with Czechoslovakia's partners in the Little Entente, Yugoslavia and Rumania. Yugoslavia has been on terms of friendship with Ger-





BARON DE CARTIER (left), Belgian ambassador to Great Britain, and Foreign Secretary Eden (right) of Great Britain



EDUARD BENEŠ, president of Czechoslovakia



WELLINGTON KOO, Chinese ambassador to France



PHIPPS (left), British ambassador, and François-Poncet (right), French ambassador to Germany



CIANO (left), Italian foreign minister, hunting with Admiral Horthy (right), regent of Hungary



YVON DELBOS, minister for foreign affairs in Bium cabinet



many since 1934. In 1937 she reached an understanding with Italy, who granted her commercial advantages and undertook to bring to an end Italian propaganda against Yugoslavia. In Rumania a government of Fascist and anti-Semitic tendencies came into power at the end of the year, and this change was expected to reflect itself in Rumanian foreign policy. Economically, Germany has maintained and strengthened her strong position in most of the countries of central and south-eastern Europe.

In several European countries the economic situation has improved somewhat during the year, in part owing to expenditure on rearmament, and there has been a slight increase in the volume of international trade. At the end of the year, hopes of lowering economic barriers centred mainly on the forthcoming trade negotiations between Great Britain and the United States which, if successful, are expected to have favourable repercussions in Europe. (See also the various countries of Europe under their names; SOCIALISM.) (E. H. C.)

**European Literature.** **Austria.**—Among the historical works of 1937 in Austria were Dr. Schuschnigg's *Dreimal Österreich*, and the first volume of Hugo Hautsch's *Geschichte Österreichs*. Biography included Victor Bibl's *Kaiser Franz, der letzte römisch-deutsche Kaiser*, and the biography of an orchestra in von Kralik's *Die Wiener Philharmoniker*. There were several volumes of essays, especially some by Stefan Zweig, namely, *Begegnungen mit Menschen, Städten, Büchern*, and others entitled *Nähe und Ferne*, by Lothar.

The following novels were outstanding: von Hammerstein's *Der Wald*, Jelusich's *Die Ritter*, Lucka's *Der Impresario*, the third volume of Musil's *Der Mann ohne Eigenschaften*, Rende's *Der Glasbläser*, and Werfel's *Höret die Stimme*.

**Hungary.**—Perhaps most significant was the continuation of the sociographic movement originated by Illyés. The Athenaeum organized a sociographic series, "Discovery of Hungary," of which two volumes have appeared (Féja's *Viharsarok*, which was banned, and Erdei's *Futóhomok*), and two others are announced.

**Switzerland.**—In French, C. F. Ramuz's very successful *Der borence*, which deals with a legend in the *Alpes vaudoises*, and his latest book, *Si le soleil ne revenait pas*, a novel about a Swiss valley with only a few hours of sunshine during the day, are of value. Guy de Pourtalès wrote an interesting book in *La pêche miraculeuse*, and G. Oltramare's *Don Juan ou la solitude* must be remembered. M. Sandoz's poems, *Souvenirs fantastiques et Nouveaux souvenirs* were important. René Morax's play, *La servante d'Evölène*, a legend of the Valais, won great success. (S. L. EN.)

**Yugoslavia.**—In the Serbian language there were two important poetical publications: an anthology of post-war Serbo-Croatian verse, *Antologija srpsko-hrvatske posleratne lirike*, collected by Gavella, and Tin Ujević's collected poems, *Pesme*. The short stories of Ivo Andrić and Borivoje Jevtić were published in collected form. Village life was studied by Radić in *Selo* (Serbian life) and by Šubić in *Kaljuga* (Bosnian life). Two satirical comedies were produced by the old dramatist, B. Nušić. (X.)

**Romania.**—Poetry, which flourished in 1937, included Emil Bota's *Intunacatul April*, Tudor Arghezi's *Ce-ai cu mine vântule?*, Aron Cotrus's three volumes, *Horia*, *Tară*, and *Minierii*, and V. Voiculescu's *Urcus*. George Gregorian's poems, entitled *Lumini de seară*, won the poetry prize of the *Societatea Scriitorilor Români*. This society also awarded a prize to the novel by Dem. Teodorescu, entitled *Robul*, a violent satire of modern life. Alexandru Cantemireanu wrote an important novel dealing with the revolutionary period of 1848, in *Din vremea lui Căpitan Costache*. Mihail Sadoveanu, the popular novelist, produced *Cazul Eugeniei Costea* and *Povești vânătoarești*, a collection of hunting stories. In his novel *Mane, Tekel, Fares*, Cezar Petrescu began a trilogy

dealing with the peasant revolution of 1907.

**Bulgaria.**—Two volumes of poetry, Cyril Christov's *Water-break*, and Blenica's *The White Bird*, should be mentioned. History and archaeology were enriched by V. Myacotin's *History of Russia from the IXth to the XVIIIth century*. Among important novels, the following may be selected: K. Stoyanov's *Maria Magdalena*, V. Polyanov's *A Prince without a Crown*, G. Kaychev's *The Gentleman with the Girl*, C. Petcanov's *He comes from the Plain*, O. Vassilev's *Heroes do not feed their Mothers*, and F. Popova-Montafova's *The Daughter of Caloyan*. (S. L. EN.)

**Czechoslovakia.**—In lyrical poetry, O. Fischer's *Guest*, V. Nezval's *Absolute Sexton*, and Jan Zahradníček's *Greetings to the Sun* were outstanding. I. Olbracht wrote stories on Jews in Carpathian Russia *Golet in the Valley*, Karel Čapek published a novel on miners *The First Shift*, and J. Durych a new historical romance *Carnival*. M. Pujmanová's novel on post-war Czechoslovakia *People at Crossroads*, E. Hostovský's picture of Jewish family life *The House without Master*, and V. Neff's story from the Prague bourgeoisie *Two at a table* attracted much attention. Among plays K. Čapek's parable on dictators *The White Plague* is easily first. Zd. Nededly published the fifth volume of his monumental *Life of Masaryk*. (See also BELGIAN, DUTCH, ENGLISH, FRENCH, GERMAN, ITALIAN, RUSSIAN, SCANDINAVIAN, and SPANISH AND PORTUGUESE LITERATURES.) (R. WK.)

**Events of the Year:** see CALENDAR OF EVENTS, 1937, pages 1-14.

**Excess Profits Tax.** The excess profits tax, which is levied and collected in the United States at this time, must be sharply distinguished from the tax which people usually have in mind when they use this name. One commonly thinks of the excess profits tax as the tax measure which existed under that name from 1917 to 1921. That was the tax which was levied on the unusual profit which the war in Europe brought to American industry. It was levied on the excess of a reasonable return upon the invested capital of the enterprise involved.

The 1937 tax is imposed as a punishment for those corporations who undervalue their capital stock in reporting it for purposes of determining their liability under the capital stock tax. To give effect to this discouragement Congress imposed an excess profits tax at the rate of 5% to which corporations are liable on any income above 12½% of the declared value of their capital stock.

Under this tax the corporation which places the very low value upon its stock, will pay a corresponding low capital stock tax, but if it has large earnings, it will make itself liable to a considerable excess profits tax by reason of the low capital stock valuation. The collections under the tax are very small amounts and probably will continue to remain so. (See also INCOME TAX; TAXATION.) (D. F.)

**Exchange Equalization Funds.** The American Exchange Stabilization Fund, set up in 1934, was provided solely with gold, out of the profits arising from the devaluation of the dollar. Until the end of 1936 it could only sell gold, and had no dollars to sell. Thus it could only operate one way. This made it ineffective, for funds were then flowing into the United States, and so it was only being asked to buy gold and sell dollars. The result was that all gold coming into the United States passed into the banking system, and enlarged the credit base. In Dec. 1936, the American administration took power to borrow in order to supply the Stabilization Fund with dollars. This put it in the same position as the English Exchange Account.





VISCOUNT HALIFAX of Great Britain (right) is shown at Victoria Station with the German Ambassador to England, von Ribbentrop

FOREIGN MINISTER BECK of Poland (right) and STEVENSON of the British Foreign Office (left) →



AMBASSADOR SIR ERIC PHIPPS of England; SIR JOHN SIMON, BARON KONSTANTIN VON NEURATH, German Foreign Minister; REICHSFUEHRER ADOLF HITLER, and an INTERPRETER (left to right), in Berlin

FOREIGN MINISTER GALEAZZO CIANO of Italy (centre) shown with CHANCELLOR KURT SCHUSCHNIGG of Austria (right) and DR. GUIDO SCHMIDT of the Foreign Office





**Great Britain.**—The British Exchange Equalization Account was founded in 1932. It originally amounted to £175,000,000, but was enlarged to £375,000,000 in 1933 and to £575,000,000 in 1937. It is owned by the Government, but operated by the Bank of England, the general lines of policy being laid down by the Government. Its function is to offset sudden and wide fluctuations in the foreign exchanges, more particularly those due to capital movements. It is not intended to counteract long-term or permanent-exchange movements, such as are caused by a persistent lack of balance between imports and exports of goods and services.

It operates by buying and selling sterling in the foreign exchange market, usually without warning. As its resources are very large, the knowledge that it may intervene has proved a strong deterrent against speculation in sterling. Usually, any foreign currencies it acquires are at once turned into gold. It deals mainly in dollars and francs against sterling and in practice operates so that in case of need it can support the franc or dollar, as well as the pound itself.

To be able to buy and sell at will, it must always hold part of its resources in gold (which can be turned into foreign currencies at will) and part in sterling. On its foundation and subsequent enlargement, there was no difficulty in supplying the Account with sterling, for the Government simply issued cash out of the exchequer. Moreover, the Exchange Equalization Account does not hold its sterling in the form of cash. Instead it re-lends it to the Government, thereby reducing the need of the Government to borrow elsewhere. On the other hand, as the Account buys gold, it has to get its sterling back from the Government in order to pay for the gold. In order to find that sterling the Government has to borrow elsewhere.

It follows that for every £1 of gold held by the Exchange Account, the Government has to borrow £1 from the money market or the general investor. In practice, the Exchange Account's gold purchases are financed by issues of Treasury bills by tender to the banks and the money market. The statutory size of the Account simply determines the limit on the amount of gold it can hold.

This system leads to a paradoxical result. Under the gold standard, an influx of gold into the Bank of England, occasioned by an influx of foreign money, enlarges the credit base and makes money easier. But if the gold goes into the Exchange Equalization Account, the credit base is not enlarged. On the contrary, the Government has to borrow from the banking system in order to pay for the gold. This creates a new demand for credit, and so money becomes tighter. The remedy is for the Exchange Account to sell gold to the Bank of England, as any gold so transferred goes to enlarge the credit base. Gold was so transferred in early 1933, and the summer of 1936. The transfer of £65,000,000 in Dec. 1936 was because the Account was full of gold nearly up to its limit. To prevent it from enlarging the credit base, the fiduciary note issue was simultaneously reduced by £60,000,000.

The Exchange Account, of course, buys gold at the current market price of about 140s. per fine ounce. In effect, it re-sells to the Bank of England at the statutory price of 84s. 11d. per ounce, and has to bear the resulting loss. On June 30, 1937, it held £186,700,000 of gold, valued at 140s. per ounce.

**Netherlands.**—The Dutch Exchange Fund, set up in Oct. 1936, resembles the English account in its constitution and method of operation. The French Fund, like the American Fund, was constituted in Oct. 1936 out of the profits of the devaluation of the franc. It too could only sell gold, but such was the outflow of funds from France during the subsequent year, that it had to sell all the gold it had and then draw on the Banque de France.

Under the Tripartite agreement of Sept. 1936, there is close

co-operation between the various exchange funds. It is often impossible to tell which fund is operating in any market at a particular moment. (See also GOLD RESERVES AND GOLD STANDARD; EXCHANGE RATES.) (N. E. C.)

**Exchange Rates.** To understand the course of the foreign exchanges during 1937, it is essential to recall the background. England had abandoned the gold standard in 1931, and the United States had devalued the dollar to 59.06% of its former gold content in 1934. The chief gold bloc countries (France, Holland, Switzerland, and Belgium) had held on to the gold standard until Sept. 1936, although Belgium had had to devalue her currency in April 1935. At the end of Sept. 1936, France and Switzerland devalued their currencies and Holland abandoned the gold standard. Belgium adhered to the gold standard at the April 1935 parity, but other countries, such as Italy and Czechoslovakia, joined in the move. Simultaneously the Tripartite Monetary Agreement was signed by England, France, and the United States, and subsequently adhered to by a number of other countries. Under this, the signatories bound themselves to co-operate in the maintenance, as far as possible, of exchange stability, and to refrain from competitive currency depreciation. The Exchange Funds of the various countries were to work together for these purposes. (See also GOLD RESERVES AND GOLD STANDARD.)

The following table, giving the sterling value of most of the currencies concerned, serves to bring the story up to the opening of 1937:

Value of £1 in	Aug. 1931	Jan. 1936	Dec. 1936
Dollars . . . . .	4.86 $\frac{3}{32}$	4.93	4.90 $\frac{5}{16}$
French francs . . . .	124	74 $\frac{1}{16}$	105 $\frac{1}{8}$
Guilders . . . . .	12.05 $\frac{3}{4}$	7.25 $\frac{1}{2}$	8.96 $\frac{1}{4}$
Belgas . . . . .	34.85 $\frac{1}{4}$	29.25	29.13
Swiss francs . . . .	24.97 $\frac{1}{2}$	15.15 $\frac{1}{2}$	21.37

During the first two-thirds of 1937 the main question was whether France could hold her devalued franc in face of the rising trend of her internal prices and costs and the continued flight of capital abroad.

Up to a point, other countries were ready to help, as witness the £40 millions loan made by British bankers to the French railways at the beginning of 1937. Still, the position was complicated at home by the declared social policy of M. Blum's Government, and abroad by the sharp spring rise in commodity and security prices, followed by the catastrophic break, which began in April 1937, and persisted up to the end of November. The course of events was further complicated by the "gold scare" of the early summer, by the French change of Government at mid-summer, and by the "dollar scare" of November.

The important point to realize is that throughout the whole year the main influence upon the exchanges was movements of capital. Current trade, including both imports and exports of goods and also payments for services, played a comparatively minor part. Also, during the year exchange movements were frequently minimized by Exchange Fund operations, and in place of continual fluctuations there were increases and decreases in the gold holdings of the various Exchange Funds. On the other hand, when exchange movements did at last occur, they were inclined to be sudden and wide. The reader is referred to the main table, which illustrates some of these movements.

The first such movement was in April. By then the gold scare was at its height. There was a general belief that the dollar price of gold was about to be reduced. The London price of gold fell to a discount below the American shipping price, and the British Exchange Fund had to buy gold to support the market. By then the



## London Rates of Exchange—Spot Rates

per £	Dec. 31, 1936	March 31, 1937	June 21, 1937	July 31, 1937	Oct. 25, 1937	Nov. 15, 1937	Dec. 2, 1937
New York . . . . . \$	4.91 <sup>1</sup> / <sub>16</sub>	4.88 <sup>15</sup> / <sub>16</sub>	4.94 <sup>1</sup> / <sub>16</sub>	4.97 <sup>3</sup> / <sub>4</sub>	4.95 <sup>1</sup> / <sub>8</sub>	4.98 <sup>13</sup> / <sub>16</sub>	4.99 <sup>1</sup> / <sub>16</sub>
Montreal . . . . . \$	4.90 <sup>3</sup> / <sub>4</sub>	4.88 <sup>3</sup> / <sub>8</sub>	4.94 <sup>1</sup> / <sub>8</sub>	4.97 <sup>15</sup> / <sub>16</sub>	4.95	4.99 <sup>1</sup> / <sub>16</sub>	4.98 <sup>3</sup> / <sub>4</sub>
Paris . . . . . Fr.	105 <sup>9</sup> / <sub>64</sub>	106 <sup>11</sup> / <sub>62</sub>	110 <sup>2</sup> / <sub>32</sub>	132 <sup>25</sup> / <sub>32</sub>	146 <sup>3</sup> / <sub>4</sub>	147 <sup>13</sup> / <sub>32</sub>	147 <sup>1</sup> / <sub>8</sub>
Brussels . . . . . Bel.	29.14	29.03 <sup>1</sup> / <sub>2</sub>	29.25	29.58 <sup>1</sup> / <sub>2</sub>	29.35	29.36 <sup>1</sup> / <sub>2</sub>	29.36
Milan . . . . . L.	93 <sup>1</sup> / <sub>4</sub>	92 <sup>29</sup> / <sub>32</sub>	93 <sup>7</sup> / <sub>8</sub>	94 <sup>3</sup> / <sub>16</sub>	94 <sup>3</sup> / <sub>16</sub>	94 <sup>27</sup> / <sub>32</sub>	94 <sup>27</sup> / <sub>32</sub>
Zurich . . . . . Fr.	93.43 (g)	92.90 (g)	93.82 (g)	94.60 (g)	94.10 (g)	94.80 (g)	94.80 (g)
Athens . . . . . Dr.	21.37	21.45 <sup>1</sup> / <sub>2</sub>	21.55 <sup>1</sup> / <sub>4</sub>	21.67 <sup>1</sup> / <sub>2</sub>	21.48 <sup>1</sup> / <sub>2</sub>	21.61 <sup>1</sup> / <sub>4</sub>	21.60
Helsingfors . . . . . M.	547 <sup>1</sup> / <sub>2</sub>	547 <sup>1</sup> / <sub>2</sub>	547 <sup>1</sup> / <sub>2</sub>	547 <sup>1</sup> / <sub>2</sub>	547 <sup>1</sup> / <sub>2</sub>	547 <sup>1</sup> / <sub>2</sub>	547 <sup>1</sup> / <sub>2</sub>
Lisbon . . . . . Esc.	226 <sup>3</sup> / <sub>4</sub>	226 <sup>3</sup> / <sub>4</sub>	226 <sup>3</sup> / <sub>4</sub>	226 <sup>3</sup> / <sub>4</sub>	226	226 <sup>1</sup> / <sub>8</sub>	226 <sup>1</sup> / <sub>8</sub>
Amsterdam . . . . . Fl.	110 <sup>9</sup> / <sub>16</sub>	110 <sup>9</sup> / <sub>16</sub>	110 <sup>9</sup> / <sub>16</sub>	110 <sup>9</sup> / <sub>16</sub>	110 <sup>9</sup> / <sub>16</sub>	110 <sup>9</sup> / <sub>16</sub>	110 <sup>9</sup> / <sub>16</sub>
Berlin . . . . . Mk.	8.96 <sup>1</sup> / <sub>2</sub>	8.93	8.98 <sup>1</sup> / <sub>2</sub>	9.02	8.95 <sup>1</sup> / <sub>2</sub>	9.02	8.98 <sup>1</sup> / <sub>2</sub>
(Reg. Marks per cent. dis- count)	12.19 <sup>1</sup> / <sub>2</sub>	12.14 <sup>1</sup> / <sub>2</sub>	12.32 <sup>1</sup> / <sub>2</sub>	12.37	12.32 <sup>1</sup> / <sub>2</sub>	12.36 <sup>1</sup> / <sub>2</sub>	12.37 <sup>1</sup> / <sub>2</sub>
Vienna . . . . . Sch.	51 <sup>1</sup> / <sub>2</sub>	51 <sup>1</sup> / <sub>2</sub>	48 <sup>1</sup> / <sub>2</sub>	44 <sup>1</sup> / <sub>2</sub>	50 <sup>1</sup> / <sub>2</sub>	47 <sup>1</sup> / <sub>2</sub>	48
Budapest . . . . . Pen.	26 <sup>1</sup> / <sub>2</sub>	26	26 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>2</sub>
Prague . . . . . Kc.	27	24 <sup>3</sup> / <sub>4</sub>	25	25 <sup>1</sup> / <sub>8</sub>	25	25	25 <sup>1</sup> / <sub>8</sub>
Warsaw . . . . . Zl.	161 <sup>1</sup> / <sub>2</sub> (a)						
Riga . . . . . Lat.	140 <sup>8</sup> / <sub>16</sub>	140 <sup>1</sup> / <sub>8</sub>	141 <sup>3</sup> / <sub>4</sub>	142 <sup>3</sup> / <sub>4</sub>	141 <sup>9</sup> / <sub>16</sub>	142	142
Bucharest . . . . . Lei.	26	25 <sup>3</sup> / <sub>4</sub>	26	26 <sup>3</sup> / <sub>4</sub>	26 <sup>1</sup> / <sub>4</sub>	26 <sup>3</sup> / <sub>8</sub>	26 <sup>3</sup> / <sub>8</sub>
Constantinople . . . . . Pst.	25 <sup>1</sup> / <sub>4</sub>	25 <sup>1</sup> / <sub>4</sub>	25 <sup>1</sup> / <sub>4</sub>	25 <sup>1</sup> / <sub>4</sub>	25 <sup>1</sup> / <sub>4</sub>	25 <sup>1</sup> / <sub>4</sub>	25 <sup>1</sup> / <sub>4</sub>
Belgrade . . . . . Din.	670	667 <sup>1</sup> / <sub>2</sub>	670	670	670	677 <sup>1</sup> / <sub>2</sub>	677 <sup>1</sup> / <sub>2</sub>
Sofia . . . . . Leu.	613	612	616	618	620	619	619
Oslo . . . . . Kr.	616 (b)	615 (b)	623 (b)	627 (b)	624 (b)	623 (b)	624 (b)
Stockholm . . . . . Kr.	213	214	216	216	216	215	216
Copenhagen . . . . . Kr.	405	405	405	405	405	405	405
Alexandria . . . . . Pst.	19.90	19.90	19.90	19.90	19.90	19.90	19.90
Brit. India . . . . . Rup.*	19.40	19.40	19.40	19.40	19.40	19.40	19.40
Hongkong . . . . . \$	22.40	22.40	22.40	22.40	22.40	22.40	22.40
Kobe . . . . . Yen *	97 <sup>1</sup> / <sub>2</sub>	97 <sup>1</sup> / <sub>2</sub>	97 <sup>1</sup> / <sub>2</sub>	97 <sup>1</sup> / <sub>2</sub>	97 <sup>1</sup> / <sub>2</sub>	97 <sup>1</sup> / <sub>2</sub>	97 <sup>1</sup> / <sub>2</sub>
Shanghai . . . . . \$	18 <sup>3</sup> / <sub>32</sub>	18 <sup>3</sup> / <sub>32</sub>	18 <sup>3</sup> / <sub>32</sub>	18 <sup>3</sup> / <sub>32</sub>	18 <sup>3</sup> / <sub>32</sub>	18 <sup>3</sup> / <sub>32</sub>	18 <sup>3</sup> / <sub>32</sub>
Singapore . . . . . \$	14 <sup>15</sup> / <sub>16</sub>	14 <sup>15</sup> / <sub>16</sub>	14 <sup>15</sup> / <sub>16</sub>	14 <sup>25</sup> / <sub>32</sub>	15	15	15
Rio . . . . . Mil.*	13 <sup>25</sup> / <sub>32</sub>	14	13 <sup>31</sup> / <sub>32</sub>	13 <sup>31</sup> / <sub>32</sub>	14	14	14
Buenos Aires . . . . . \$	14 <sup>1</sup> / <sub>2</sub>	14 <sup>17</sup> / <sub>32</sub>	14 <sup>17</sup> / <sub>32</sub>	14 <sup>1</sup> / <sub>4</sub>	14 <sup>1</sup> / <sub>4</sub>	14 <sup>3</sup> / <sub>16</sub>	14 <sup>3</sup> / <sub>16</sub>
Valparaiso . . . . . \$	28 <sup>3</sup> / <sub>32</sub>	28 <sup>3</sup> / <sub>16</sub>	28 <sup>3</sup> / <sub>16</sub>	28 <sup>3</sup> / <sub>32</sub>	28 <sup>3</sup> / <sub>32</sub>	28 <sup>3</sup> / <sub>32</sub>	28 <sup>3</sup> / <sub>32</sub>
Montevideo . . . . . \$ *	21 <sup>15</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>32</sub>	3 <sup>23</sup> / <sub>32</sub>	3 <sup>27</sup> / <sub>64</sub>	3 <sup>21</sup> / <sub>16</sub>
Lima . . . . . Sol.	4 <sup>1</sup> / <sub>4</sub> d. (a)	4 <sup>1</sup> / <sub>4</sub> d. (a)	4 <sup>1</sup> / <sub>4</sub> d. (a)	4 <sup>1</sup> / <sub>4</sub> d. (a)	4 <sup>1</sup> / <sub>4</sub> d. (a)	4 <sup>1</sup> / <sub>4</sub> d. (a)	4 <sup>1</sup> / <sub>4</sub> d. (a)
Mexico . . . . . Pes.	16.05	16.20	16.10 <sup>1</sup> / <sub>2</sub>	16.44 <sup>1</sup> / <sub>2</sub>	16.62 <sup>1</sup> / <sub>2</sub>	16.85	16.98 <sup>1</sup> / <sub>2</sub>
Manila . . . . . Pes.*	15 (a)	15 (a)	15 (a)	15 (a)	15 (a)	15 (a)	15 (a)
Moscow . . . . . Rbls.	16.12 (c)	16.12 (c)	16.12 (c)	16.12 (c)	16.12 (c)	16.12 (c)	16.12 (c)
	131 <sup>1</sup> / <sub>2</sub> (e)	128 (e)	128 (e)	128 (e)	124 (e)	124 (e)	124 (e)
	26 <sup>3</sup> / <sub>4</sub>	27	28 <sup>1</sup> / <sub>4</sub>	28	27 <sup>1</sup> / <sub>2</sub>	26	25 <sup>1</sup> / <sub>2</sub>
	39 <sup>7</sup> / <sub>8</sub> (a)	39 <sup>7</sup> / <sub>8</sub> (a)	39 <sup>7</sup> / <sub>8</sub> (a)	39 <sup>7</sup> / <sub>8</sub> (a)	39 <sup>13</sup> / <sub>16</sub> (a)	39 <sup>13</sup> / <sub>16</sub> (a)	39 <sup>13</sup> / <sub>16</sub> (a)
	19 <sup>1</sup> / <sub>2</sub>	18.70	18	18 <sup>1</sup> / <sub>4</sub>	19 <sup>1</sup> / <sub>4</sub>	19 <sup>1</sup> / <sub>4</sub>	20 <sup>1</sup> / <sub>2</sub>
	18	18	18	18	18	18	18
	24 <sup>31</sup> / <sub>32</sub>	24 <sup>1</sup> / <sub>2</sub>	24 <sup>7</sup> / <sub>32</sub>	24 <sup>1</sup> / <sub>4</sub>	24 <sup>7</sup> / <sub>32</sub>	24 <sup>1</sup> / <sub>32</sub>	24 <sup>1</sup> / <sub>16</sub>
	24 <sup>3</sup> / <sub>4</sub> (f)	25 <sup>3</sup> / <sub>32</sub> (f)	26 (f)	26.35 <sup>3</sup> / <sub>4</sub>	26.23 <sup>7</sup> / <sub>8</sub>	26.45 <sup>3</sup> / <sub>8</sub>	26.43 <sup>3</sup> / <sub>4</sub>

(a) Official rate. (b) Under Anglo-Turkish agreement. (c) Average remittance rate for importers. (d) The official rate for the milreis was abolished in November, 1937. (e) Nominal. (f) Approximate. Dealings in roubles at 4<sup>1</sup>/<sub>4</sub> French francs to 1 rouble. (g) For account controller of Anglo-Italian debts.

\* Pence per unit of local currency.

pressure on the franc was severe, and the French authorities took advantage of the general disturbance to allow the franc to slide from frs.106<sup>3</sup>/<sub>8</sub> to frs.111 to the pound.

This new rate for the franc was held until the end of June when M. Blum's Government fell and was replaced by M. Chautemp's Government. One of the first acts of the new Government was to effect a new devaluation of the franc. The 1926 devaluation had reduced the gold content of the franc from 65<sup>1</sup>/<sub>2</sub> to 49 milligrammes of gold, and the franc was now devalued to 43 milligrammes. In consequence, sterling rose from frs.111 to just over frs.130 to the pound. Meanwhile, the summer break in Wall street had caused the pound to rise against the dollar from \$4.89 to \$4.98.

The pressure on the franc prior to this devaluation had also created certain problems for the British authorities. In order to help both the franc and the London bullion market, the British Exchange Equalization Account had had to make heavy purchases of gold. By the end of June the capacity of the Account to buy gold was near exhaustion, and so an Act was passed enlarging the Account by £200 millions sterling.

During August quieter conditions prevailed, and the new French Government tried to set the French finances in order. Unfortunately, the flight of capital from France continued, and in Sep-

tember a fresh break occurred, which at one time carried the pound to just over frs.150. Fortunately, this was the turning-point. Serious weakness had by then developed in the London and New York stock markets, while the impression gained ground that the new French Government was proving successful in its financial efforts. Thus capital at last began to return to France, and the movements were accelerated in November by a rumour that the American Government was contemplating an increase in the dollar price of gold in order to arrest the American autumn business recession. Sterling fell to frs.147, and the French Exchange Fund was able to recover a substantial part of its previous gold losses. Simultaneously sterling rose to \$5.02. By the end of November this particular scare had subsided, and sterling came back to \$4.99; but France held most of her regained gold. Indeed, the French position was further strengthened during the autumn, for loans from Switzerland and Holland to the French railways, together with the French gold recoveries, enabled the French railways to repay the sterling credit granted to them at the beginning of the year.

The whole history of 1937 is thus one of sudden capital movements, inspired partly by fear and rumour, and partly by the radical change in conditions on the London and New York stock mar-



kets—particularly New York, where the autumn collapse was more serious. Underlying this was the deterioration in French finances up to midsummer, followed by the autumn recovery. Commercial influences had little effect upon the exchanges. (See also EXCHANGE EQUALIZATION FUNDS.) (N. E. C.)

**Exchange Stabilization Fund:** see EXCHANGE EQUALIZATION FUNDS.

**Exhibitions and Fairs:** see FAIRS AND EXHIBITIONS.

**Exploration and Discovery.** Dr. G. Weidman Groff of Lingnan university, Canton, China, led a National Geographic Society expedition into the interior of Kwangsi Province, South China, to explore that little-known region. The expedition obtained the first specimens known to Western science of the Lohon plant, the fruit of which is highly prized by the Chinese for its medicinal qualities. In 1937 the National Geographic Society in co-operation with the United States Navy sent to Canton island, in the middle of the Pacific ocean, an expedition which made important studies of the sun during the longest total solar eclipse in over 1,200 years, that of June 8. Dr. William M. Mann led the National Geographic Society-Smithsonian Institution East Indies expedition in the Netherlands Indies and adjacent portions of south-eastern Asia. A cross-section of the fauna of the region was represented in the cargo of animals brought to the United States and presented to the National Zoological Park in Washington.

**Antarctic Exploration.**—The British Graham Land expedition, led by John Rymill, completed a stay of two and one-half years in the Antarctic. It reported that Graham Land, opposite South America, is not an island but a peninsula of the Antarctic continent. Alexander I Land, nearby, was found to be several times larger than previously reported. Rocks in Graham Land were found to be related to formations at the southern tip of the Andes. Lars Christensen of Norway led an expedition in 1936–37 to chart the little-known coast line in the Atlantic sector of the Antarctic continent between long. 45° E. and long. 20° W. Viggo Wideroe, aviator with the expedition, reported discovery of a range of mountains between the 35th and 40th degrees E. long. and about 70° S. lat. The "Discovery II," British exploration ship, completed a 20-months' study of Antarctic waters, laying emphasis on smaller forms of marine life and the distribution of whales. (See also ANTARCTICA; ANTARCTIC EXPLORATION.)

**American Exploration.**—Dr. H. E. Anthony, American Museum of Natural History, led a party which on September 16 climbed Shiva Temple, a 300-acre plateau in the Grand Canyon of Arizona, believed to have been isolated about 20,000 years by erosion since the glacial period. The expedition found that animals on the plateau had not developed differently from others in the region, despite this long apparent isolation. Mount Lucania, 17,500ft. high, in south-western Yukon Territory, North America's highest hitherto-unclimbed peak, was scaled July 9 by Bradford Washburn, Cambridge, Mass., and R. H. Bates, Philadelphia, Pa. An expedition of the Utah Museum Society, exploring the Kaiparowits plateau in southern Utah, found dinosaur tracks in a sandstone slab, ancient rock paintings in which the swastika is a prominent feature, and a mountain in which coal veins have been burning for centuries. Captain E. E. Loch, leader of the New York Museum of the American Indian Andes-Amazon expedition, reported rediscovery of Inca gold workings in the Llanganates range of the Andes mountains of Ecuador; finding that the legendary gold of Lake Valverde is only "gold" mica, or fool's gold; mapping previously unexplored territory; and locating a new trans-Ecuadorian air route.

**Arctic Exploration.**—Four Soviet Russian scientists estab-

lished a camp on an ice floe near the North Pole in May, to spend a year collecting meteorological data for the proposed air route between Russia and the United States. They were in constant touch with Moscow by radio. The camp and its ice floe drifted on a zigzag course toward north-east Greenland, at an average speed of more than 3½ miles per day. Three Russian flyers, Valeri Chkaloff, Georgi Baidukoff, and Alexander Beliakoff, on June 20, completed the first flight over the North Pole between Moscow and the United States. They landed in Vancouver, Wash. A world record non-stop and non-refuelling aeroplane flight of 6,262mi. was established July 14 by three Russians, Mikhail Gromoff, Andrei Yumosheff, and Sergei Danilin, when they landed near San Jacinto, Calif., after taking off from Moscow 62 hours before, and passing over the North Pole. A third party of six Russian flyers, led by Sigismund Levanevsky, flew from Moscow over the same route August 12, but were forced down between the North Pole and Alaska and never found. (See also ARCTIC EXPLORATION.) (G. GR.)

**Exports and Imports.** As in many other spheres of activity, 1937 may prove to be a turning-point in the field of international trade. The depression of 1929–33 brought international trade almost to a standstill. Some countries found that the prices of their staple exports had fallen to zero, and that huge stocks of their chief products were accumulating, unsaleable in the world's markets. Other countries were faced with external debts which could not be met, and with a consequent breakdown of the whole mechanism of foreign exchange. Most countries rushed to heighten tariffs and impose import quotas and exchange restrictions in an attempt to take shelter as far as possible from the blast of the depression; and so far as international trade was concerned, these measures simply aggravated the depression.

The years 1933 onwards to 1937 were a period of gradual recovery. Prices rose, surplus stocks were liquidated, production in some cases was regulated by international agreement, and some countries were able to compound with their foreign creditors and relax their exchange restrictions. Currency devaluation also helped to restore equilibrium to international trade. As a result, imports and exports expanded over most of the world. Many countries, however, retained some measure of exchange control, either as an essential part of their new social and economic system of internal government, or because they felt bound to make imports conform in value to their exports. Furthermore, the system of bilateral exchange clearing or payments agreements between pairs of countries persisted, for political as well as economic reasons.

While some of these agreements in themselves worked reasonably well, their net effect was that international trade to some extent remained canalized, and was denied an opportunity for full and free recovery.

**The United States.**—The following table shows the United States trade returns for recent years:

Monthly Average	Retained Imports (\$ millions)	Domestic Exports (\$ millions)	Surplus of Exports (+) or Imports (–) (\$ millions)
1929 . . . . .	362	430	+68
1932 . . . . .	110	131	+21
1933 . . . . .	119	137	+18
1934 . . . . .	136	175	+39
1935 . . . . .	170	187	+17
1936 . . . . .	202	201	— 1
1937 (9 months) .	265	260	— 5



The most important development, amid the fall and recovery of the past eight years, is that the United States' export surplus has turned into an import surplus. Thus her trade balance has at last conformed to the typical balance of a creditor nation, in which payments due from her debtors are received in the form of an import surplus. In spite of the business recession of late 1937, both imports and exports ran well ahead of those of 1936. Here again, it will be of interest to see if there is any falling-off in 1938.

In 1935 and again in 1936, the United States had an adverse balance of payments (\$153,000,000 in 1935 and \$333,000,000 in 1936). Silver purchases, immigrants' remittances to their home countries, and American tourists' expenditure abroad far outweighed interest and dividends on America's foreign investments. Nor is there any reason to believe that 1937 will show a different result. The truth is, that the United States' huge gold acquisitions of recent years were entirely due to the big influx of foreign capital into the United States.

The French repatriation of Nov. 1937 led to an immediate outflow of gold from the United States, which again shows how gold and capital movements are linked together.

**The United Kingdom.**—The trade returns for recent years are summarized below:

Monthly Average	Retained Imports (£ millions)	Exports of British Goods (£ millions)	Import Surplus (£ millions)
1929 . . . . .	92.6	60.8	31.8
1932 . . . . .	54.2	30.4	23.8
1933 . . . . .	52.2	30.7	21.5
1934 . . . . .	56.7	33.0	23.7
1935 . . . . .	58.5	35.5	23.0
1936 . . . . .	65.7	36.7	29.0
1937 (9 months) .	79.5	43.5	36.0

The drop between 1929 and 1932 is very noticeable, even though it was largely but not entirely due to the fall in prices. Since 1933, there has been a progressive recovery, culminating in the 1937 returns, which show imports nearly back to the 1929 level.

Exports have improved as well, but the increase is less marked. The result is that the import surplus for 1937 was in excess of that even for 1929.

The growth in the import surplus, especially during the past two years, is due to a variety of causes. First, there is the rise in world prices up to early 1937. This was more pronounced in prices of food and raw materials, which Great Britain largely imports, than in prices of finished goods, which account for most of Great Britain's exports. Next, there was the big recovery in British internal industry and commerce. More raw materials were needed by British manufacturers, and the home demand for their products was such that in some cases export orders were either turned down or not actively sought. British rearmament increased this tendency, particularly in the heavy industries. Apart from these purely British factors, there were the new factors abroad of Japanese competition (up to mid-1937) and German trade based on exchange clearing or compensation agreements. Probably these were of much lesser importance than the influences previously mentioned.

So far this growth in Great Britain's import surplus has not been a serious matter from the foreign exchange point of view, though all the evidence at the end of 1937 suggested that the year's balance of payments would show a fairly large deficit. Much of Great Britain's trade is either with the empire or the sterling area countries, and to that extent a trade deficit does not automatically throw a strain upon the pound or upon the British gold reserves. The rearmament demand for raw materials is

likely to continue, but the autumn's fall in prices may next year reduce the cost of raw material imports. It is, however, equally likely to affect the purchasing power of many of Great Britain's overseas customers.

**France.**—The French trade returns of recent years are similarly summarized below:

Monthly Average	Imports	Exports (Fr. millions)	Import Surplus
1929 . . . . .	4,852	4,178	674
1932 . . . . .	2,484	1,642	842
1933 . . . . .	2,369	1,539	830
1934 . . . . .	1,925	1,487	438
1935 . . . . .	1,745	1,289	456
1936 . . . . .	2,117	1,288	829
1937 (11 months)	3,148	1,799	1,347

The adherence of France to the 1938 gold parity of the franc, which lasted up to Sept. 1936, forced on her a policy of continued deflation, which seriously affected her trade. This explains the continued drop in both imports and exports up to and including the year 1935. In Sept. 1936, came the first devaluation of the franc. This caused an immediate and proportionate increase in the cost of most French imports, and this is reflected in the 1936 increase in the value of imports. Exports, however, did not respond at once, partly because French trade was slow in reviving and partly because, unlike imports, the average price of exports is determined by internal conditions rather than the value of the franc in foreign currencies. Nineteen thirty-seven has witnessed a big increase on both sides. Imports have risen the most in value, due to the 1937 devaluation and depreciation of the franc, and also to the revival in French industry and French rearmament needs.

The increase in exports is also substantial, and can be ascribed both to the rising trend of French production costs and to the year's recovery in French trade.

The bigger increase in imports has raised the import surplus to twice its 1929 level. Any such comparison is, of course, confused by the intervening fluctuation in the franc and other currencies, but there is no doubt that last year France had a big adverse trade balance. So far this has been a much less potent cause of the weakness of the franc than the flight of French capital abroad; and if French capital returns, the franc will improve, in spite of a large adverse trade balance.

Still, in the long run, the 1937 adverse trade balance is probably bigger than France can tolerate.

**Germany.**—The trade returns for recent years are as below:

Monthly Average	Retained Imports (Rm. millions)	Domestic Exports (Rm. millions)	Surplus of Exports (+) or Imports (−) (Rm. millions)
1929 . . . . .	1,120	1,124	+ 4
1932 . . . . .	389	478	+89
1933 . . . . .	350	406	+56
1934 . . . . .	371	347	−24
1935 . . . . .	347	356	+ 9
1936 . . . . .	352	397	+45
1937 (10 months)	445	476	+31

To interpret the trend of the returns, it is first necessary to remember that imports are regulated in such a way as to ensure an export surplus. The valuation of both imports and exports must also be qualified to some extent by the fact that most of Germany's trade is conducted through exchange clearing and compensation agreements, embodying in many cases an agreed rate of exchange. The expansion in imports and exports since 1933, though considerable, falls short of the expansion in Germany's



internal activity. This explains the current German argument that her raw material imports now fall short of her needs. It also explains the complex system of import control, designed to meet such varying needs as the requirements of her export industries, rearmament, and the development work under the Four-Year Plan.

**Other Countries.**—The rest of the world followed the general trend of slump up to 1932 and recovery up to 1937. In most cases, foreign trade is governed by the demand for primary products, which form the staple exports of such countries as the British Dominions and the South American republics. The recovery in primary products from 1932 to 1937 increased first these countries' export trade and then their ability to import. Similarly, the setback in commodity prices during the last half of 1937 has already begun to affect certain South American countries, while the fall in wool must be affecting Australia after her previous good years. Still taking a general view, world trade was, at the end of 1937, much better than in 1932. (N. E. C.)

**Fabrics:** see FASHION AND DRESS: *Fabrics*.

**Factories Act:** see LABOUR LEGISLATION: *Great Britain*.

**Fairs and Exhibitions.** In the bazaars of the East and the fairs and markets of the middle ages, goods were collected, displayed and sold to the buyer. The modern plan is to exhibit samples of the season's offerings at commercial reunions and thus stimulate general trade. Orders may be taken but they are fulfilled elsewhere.

Many of the "shows" are held annually and they enable distributive agencies to see the latest types and fashions in their fields of activity. Automobiles, aircraft, motorboats, machinery, accessories for home and office, foods, luxuries and books are in the shop window or booth and inspected.

The international and inter-industrial exhibition synchronizes many "shows" and covers all the developments of modern civilization. It continues as a rule during the pleasantest months of the year and associates manufactures, agriculture and the arts with amusements and municipal development. The first of these impressive fairs (1851) was held in Hyde Park, London, and the Crystal Palace that contained the exhibits, after removal to Sydenham, was burned (Nov. 30, 1936).

Many international exhibitions have celebrated anniversaries. In 1939, New York will thus observe the sesquicentennial of Washington's inauguration as first president of the United States on the steps of the Sub-Treasury in Wall street. The New York World's Fair, surveyed in prospect, appears to be the largest enterprise of the kind ever undertaken. It is preceded by civic improvements that are transforming much of New York city, including the Triborough bridge, the Bronx-Whitestone bridge across Long Island Sound, the Spuyten Duyvil bridge across the Harlem river, tunnels under the Hudson and East rivers and the Hudson river parkway parallel with Riverside drive which is a link in a clear route from Westchester county along Manhattan Island and into New Jersey. The site of the New York World's Fair is 1,216½ acres of reclaimed land known as Flushing Meadows. The plans include 10,000 trees, 25,000 hedge plants, 250,000 spring bulbs, 450,000 annuals and 250 acres of grass. Amusements continue for 2 miles of lake front and will accommodate 250,000 persons at any given time. The arrangements for catering embrace 43,200 seats in restaurants and 337 food stands. Numerous buildings are grouped around a "trylon" or triangular obelisk 700ft. high which serves as beacon and for broadcasting. A huge globe or "perisphere," 200ft. in diameter, and apparently supported by fountains, contains a revolving platform from which spectators can survey "the world of tomorrow."

The estimate of expenditure on this World's Fair has risen to \$150,000,000—roughly the cost of three battleships. This expenditure is met by the surpluses realized on the sale of concessions to exhibitors, caterers and the sideshows, and by receipts from the public. It is hoped that 50,000,000 persons will visit the fair in the first year and it can be reopened in 1940 if public interest continues. The indirect benefits of the World's Fair have also to be entered on the balance sheet. No fewer than 64 nations are participating, a remarkable expression of international goodwill, and when the Fair is brought to a conclusion New York will have acquired a permanent playground, 50% larger than Central Park (840 acres).

As the metropolis of the Pacific, San Francisco has recently displayed astonishing progress. The San Francisco-Oakland bridge cost \$77,000,000 and is the longest in the world. The Golden Gate bridge cost \$33,000,000 and is the longest span in the world. "Clippers of the Air" have added the spectacular to western aviation. In 1939, California is holding a Pageant of the Pacific to celebrate these great changes. The site is an area of 400 acres reclaimed from San Francisco bay as a WPA project and costing \$3,803,000. It has been named Treasure Island and it is destined ultimately to be an airport for which purpose certain buildings of the exposition will be adaptable. The cost of the Fair—estimated \$50,000,000—is met, actually and prospectively, by Federal and State grants, public subscriptions, concessions and expenditure by visitors. The architecture of the exposition—Mayan, Malayan and Cambodian is picturesque and characteristic. It will be enhanced by coloured flood light. A Temple of Music, a Theatre of the Sky and carnivals in the 40-acre "fun zone" are among the arranged attractions.

In 1938, Great Britain concentrates her energies on the Empire Exhibition to be held in Glasgow from May to October. It is the largest exhibition in Great Britain since Wembley in 1924–25 and is characterized by boldly modern architecture. The site of the exhibition is Bellahouston park covering 1,000 acres and there are 30 buildings one of which will include an elaborate relief map of Scotland with moving trains, ships, etc. The aim is definitely to present a vivid picture of what the Empire means in terms of life and commerce.

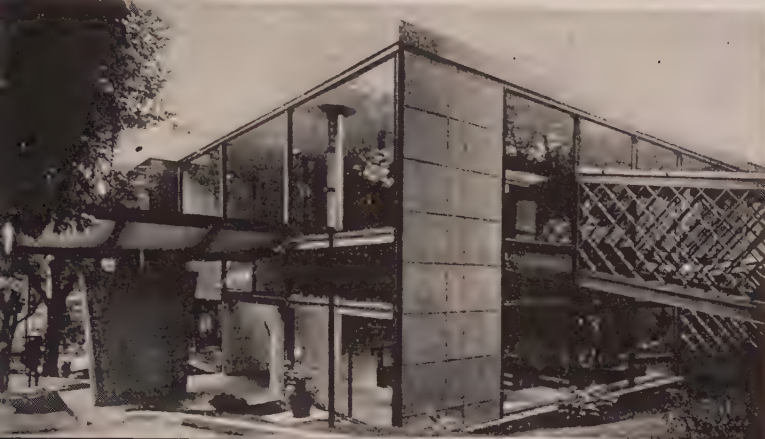
Mention should be made also of the Paris Exposition of 1937 with buildings costing \$10,000,000, at which 50 nations were represented, and of Japan's proposal to hold an exhibition at Tokyo in connection with the Olympic games (1940). (See also ARCHITECTURE: *Paris Exposition*.)

**Falkland Islands,** a group in the south Atlantic (see *Encyclopædia Britannica*, vol. 9, pp. 51–53); a British Crown colony since 1833, the claim of ownership by the Argentine Government not having been recognized by Great Britain or the League of Nations. Area, 4,600 sq.mi.; population (estimated 1935, including South Georgia), 3,180. The chief town is Stanley, in East Falkland (population, 1,200). South Georgia, the South Shetlands, South Orkneys, Graham's Land, and other British islands in the neighbourhood, are dependencies of the Falklands. Sheep-farming is the principal industry; and whaling is extensively engaged in. The 1935 revenue was £49,800 and the expenditure £59,800; exports were valued at £124,300, and imports at £100,800.

**Farmers' Co-operatives.** Ten leading countries of the world have 40,868 farmers' co-operative associations engaged in marketing farm products or buying farm supplies. France has 16,823, with 847,686 members. In the United States latest estimates by the Farm Credit Administration place the number at 10,500. Of those in the United States



ADMINISTRATION BUILDING for the  
World's Fair in New York City in 1939



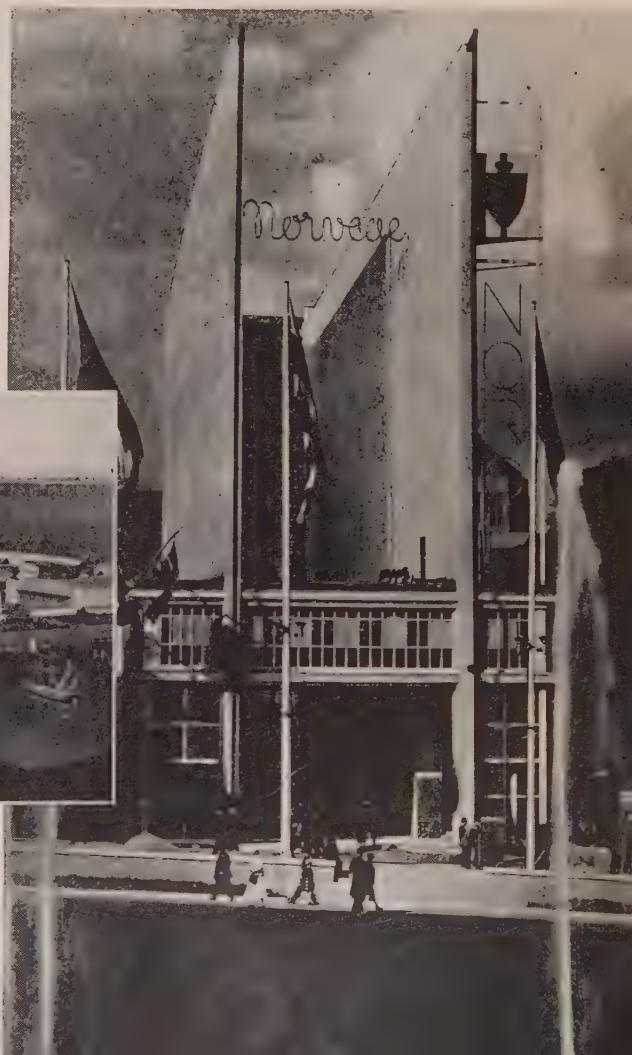
Upper picture—JAPANESE EXHIBIT at the French world's fair  
Lower picture—THE BELGIAN BUILDING at the Paris Exposition



A NIGHT DISPLAY at the Paris Exposition



ARTIST'S PROJECTION of the Golden Gate International Exposition as it will  
appear on Treasure Island, San Francisco Bay, February 18 to December 2, 1939



NORWEGIAN BUILDING at the Paris Exposition



8,388 marketing associations have 2,710,000 members and did an annual business of \$1,586,000,000; 2,112 purchasing associations had 950,000 members and annual business of \$254,000,000. In Canada the official directory lists 779 marketing and 514 purchasing associations. In both countries, however, some organizations perform both services. Latest available figures give 1,090 as the number of farm co-operatives in Great Britain, 150,016 members and annual business of \$54,119,154. Denmark, long outstanding, has 5,182 associations with 590,853 members and annual business of a quarter of a billion dollars in a farm population of about 2,000,000. In Canada and the United States there is approximately one co-operative member to every two farms. This does not mean every other farmer is a member, for often one farmer may belong to several associations. Switzerland has 6,136 associations with 362,927 members and \$21,324,324 annual business; Czechoslovakia, 5,376 with 597,079 members, and \$87,744,823 annual business; Finland, 1,562 with 366,134 members, and \$60,076,440; Sweden, 1,541, with 395,474 members, and \$54,412,800; Norway, 1,363 with 204,356 members, and \$36,683,466. Germany, Italy, and Russia are not included because they present no comparable figures of free, co-operative enterprises. In the United States there are 3,010 grain, 2,270 dairy, 1,063 fruit and vegetable, 1,040 live stock, 311 cotton, 154 poultry, 114 wool marketing associations. (S. O. R.)

**Farm Income.** For the fifth successive year farm income in the United States advanced in 1937. Estimates of the Department of Agriculture place the income for the twelve months at nearly \$9,000,000,000, approximately \$1,000,000,000 more than that of 1936 which was \$7,865,000,000. For farm products in 1937 farmers received, it is estimated, about \$8,575,000,000, which is almost double the amount received in 1932, the low year of the depression. In addition to the sale of products Government payments in 1937 amounted to \$330,000,000, which will probably have been increased to about \$400,000,000 to \$450,000,000 by deferred payments from the 1936 agricultural conservation program, which figures are not available. Similar Government payments made in 1936 added \$287,000,000 to the farm income of that year, which included \$7,578,000,000 from the marketing of farm products.

While the total farm income for 1937 was not as large in the amount of actual money received, as compared to the pre-depression years, the buying power is greater than that of the period beginning in 1924 and ending in 1928 because products the farmer buys were cheaper in 1937. The 1937 income bought almost as much as the peak-year income of 1929 when farmers received for their products alone \$10,479,000,000. Government payments did not begin until 1933. The index of prices paid by farmers in 1929 was 99. It declined to 69 in 1932 and had risen to 86 in 1937. This index is based on 1924-29 prices.

There are, however, more people on the farms now than during the pre-depression era, which partly offsets the higher buying power since there is a larger per capita division of income. The pre-depression years, on the other hand, were not a period of great prosperity to farmers because not only farm living costs were high, but interest rates were unusually burdensome because the price of farm lands had fallen steadily and many farms had been mortgaged at inflated land prices.

From the peak year of 1929 farm income from marketing declined to \$8,451,000,000 in 1930, to \$5,899,000,000 in 1931, and to the low of \$4,328,000,000 in 1932. In 1933 income from marketing increased to \$4,955,000,000. To this the Government added payments of \$162,000,000, raising the farm income for that year to \$5,117,000,000. In 1934 the money received for farm products equalled \$5,792,000,000. Government payments of

\$556,000,000 increased this to \$6,348,000,000. Farm marketing brought in a total of \$6,507,000,000 in 1935, and Government grants amounting to \$587,000,000 raised the year's income to \$7,094,000,000. In 1936, although the total was about \$1,000,000,000 under that of 1937 the index of prices paid by farmers was 81 as compared to 86 in 1937.

The drastic decline in commodity and security prices in the autumn of 1937 severely affected farm income. This was partly offset by the huge volume of products from bumper crops, especially of cotton, corn and fruits. Cotton sold at the lowest price in four years and wheat broke under a dollar. Tobacco, although a large yield in 1937, maintained good prices because of the constant increase in smoking. The rice crop was the largest in 28 years. Dairy and poultry prices continued good and the potato yield was 69,000,000 bushels more than 1936. (S. O. R.)

**Farming:** *see* AGRICULTURE.

**Farm Mortgages.** A total of \$44,715,769 in mortgages on 25,113 farms was paid in full during the year ending Sept. 1, 1937, W. I. Myers, governor of the United States Farm Credit Administration, reported. This exceeds by more than 60% similar payments in full in 1936. First mortgage loans on 11,925 farms, totalling \$26,402,611 were paid the Federal Land Banks, and loans on 13,188 farms, amounting to \$18,313,158, were paid to the Land Bank Commissioner. Land Bank Commissioner loans have been made since 1933, many of them on second mortgages to farmers facing foreclosure. At that time, the Government reduced interest rates on outstanding loans to 3½% until June 30, 1937, and 4% on new loans. During the year \$39,231,091 regular installments of principal were paid. This was 83.2% of the amount due, the Farm Credit Administration reported, and compares with 63.7% of regular, installment payments in 1936. Payments on Land Bank Commissioner loans in 1937 were more than double those of 1936.

The shift of farm indebtedness to Federal agencies continues and it is estimated that Government institutions now hold approximately 40% of the farm mortgages. In 1928 the life insurance companies held 22.9% and Federal Land Banks, 12.1%. By 1935 the life insurance company holdings had declined to 16.3, the commercial and savings bank holdings from 10.8 to 3.4% and the mortgage company holdings from 10.4 to 3.4%. Marking its fourth anniversary on April 27, 1937, the Federal Credit Administration reported it had lent \$4,367,000,000 to farmers, as follows: Federal Land Banks, \$1,259,000,000; Land Bank Commissioner, \$918,000,000; production credit associations, \$652,000,000; Federal Intermediate Credit Banks, \$614,300,000; Regional Agricultural Credit Corporations, \$413,000,000; emergency crop loans, \$149,000,000; emergency feed loans, \$72,000,000; 13 banks for co-operatives, \$232,000,000. The total farm mortgage debt is roughly estimated at \$7,500,000,000. It was \$3,320,000,000 in 1910, \$7,857,000,000 in 1920, \$9,460,000,000 in 1929, the peak year. Since then it has declined. The 1937 estimate cannot be exact because of foreclosures and compositions still in process, and Government authorities, therefore, give no precise figure. (S. O. R.)

**Farm Tenancy Act:** *see* UNITED STATES: Congress.

**Farouk I** (1920— ), king of Egypt, only son and eldest child of King Fuad I; born at Cairo on Feb. 11, 1920; succeeded his father on April 30, 1936. In 1935, as H.R.H. Prince Said, he was sent to England to complete his studies. He represented his country at the funeral of King George V; but his father's death prevented his proceeding to the Royal Military





AS WALLACE SEES IT." The economic see-saw between fat and lean years, as Siegel pictures in *The Richmond Times-Dispatch*, the U.S. Government plans for an Ever Normal Granary

Academy, Woolwich, and he returned to Egypt, a regency council electing for him until his coming of age on July 29, 1937.

On that same day, he was invested as king in the parliament building, Cairo.

On Aug. 22, 1937, the king's engagement to Mlle. Sasi Naz Mifcar, daughter of a judge of the Alexandria Mixed Appeal Court and granddaughter of a former prime minister, was announced, the wedding later being fixed for Jan. 20, 1938. Later in the year a constitutional crisis arose, partly through the king, against the advice of Nahas Pasha, reappointing (Oct. 20) Aly Maher Pasha to his former office of chief of the royal cabinet, and partly owing to a disagreement between the king and his prime minister over the interpretation of the constitution with reference, especially, to the appointment and dismissal of ministers. Before the end of the year the crisis had come to a head, and on Dec. 30, Nahas Pasha was dismissed and a new cabinet appointed (see EGYPT: History).

**Fascism.** Fascism is a term derived from the Latin *fascēs*—the bundle of birch rods, bound together by a red thong and containing an axe in the middle, which was carried by victors before the higher Roman magistrates as a symbol of executive authority. In its modern Italian usage, by a natural extension, the term *fasci* signifies groups or bodies of men combined in a political organization. Since 1919 the term fascism has been particularly and specifically applied to the principles and organization of an Italian nationalist political party, founded and led by Signor Mussolini, which in Oct. 1922 assumed control of the government of Italy under the style of the *partito nazionale fascista*. By an easy transference the term has also come to be applied to the principles and organization of similar parties in other countries. In its widest sense it thus designates any body

of belief, backed by a party, which insists on national unity and executive authority, most particularly in opposition to Communist principles and propaganda. In this sense it may include the national Socialism of modern Germany; but German national socialism has its own peculiar features (for example, its cult of racial unity and its special emphasis on the principle of leadership), and in spite of its analogies with Fascism, it may be classed as *sui generis*.

The principles of Italian Fascism, which may be taken as the type, begin in a strong sense of the need and the value of executive authority, and therefore in opposition to parliamentary democracy, with its supposed exaggeration of the authority of the legislature (and thus of the multiple parties which fill the legislature) at the expense of the executive. The source of a single and powerful executive authority is sought in a single party, which permits no other parties. The single-party system, as it may be called, is thus an essential element of Fascism. The inspiration of this single party is found in a deep conviction of the prior and supreme value of national unity, overriding party divisions, overriding the struggle of classes, overriding local particularism. The Italian Charter of Labour of 1927 (one of the great documents of the régime) accordingly asserts that the Italian nation is a higher organism, superior to all individuals and groups, which is integrally realized in the Fascist State—that is to say, in the government of the Italian State by the Fascist party. On this basis, Fascism becomes "totalitarian": in other words, it seeks to control the whole of the body politic, and the whole of its range of life—education, the use of leisure, production, and every activity—by the one principle of national unity and national power. On the other hand, and for the last dozen years, since the principle was first enunciated in 1926, Fascism is also "corporative" and seeks to institute the corporative State. It believes that masters and men, in each branch of production, should be organized in a joint corporation or guild, and should regulate, through that guild, their mutual relations and their common effort of production. Meanwhile, in the field of external relations, Fascism has steadily emphasized the principle of national power: it has promoted national expansion in Abyssinia; it has recently put much of the national industry on a war footing.

It has also asserted the idea of national self-determination by seceding from the League of Nations.

In its organization Fascism has been true to its principles. At its centre stands the Grand Council of the Fascist party, under the presidency of the Duce. The party itself includes about 2,000,000 regular members; and there is also a party militia of about 200,000. The head of the party is also the head of the government, or prime minister; his office is permanent, and his power ubiquitous. The Chamber of Deputies, under the law of 1928, is recruited from the Fascist party; but by its side, and apparently as its destined successor, there has stood for the last eight years a national council of corporations. It was not, however, until 1934 that actual "corporations" were instituted in the various branches of production; but since that year there have been 22 corporations at work. The "syndicates" (federations of employers and trade unions of workers) which join to form these corporations or guilds are bodies recognized and regulated by the Government; and all in all, in its organization, Fascist Italy is a highly unified national State, held together under the control of a single party, and bound together by a single and vigorous discipline.

(E. B.)

**Fashion and Dress.** It would have been strange if, in a year so marked by change throughout the world, fashions too had not shown a restless vacillation. For



modes and manners never fail to reflect the temper of the times. The two fundamentals of feminine dress are shape or silhouette, and skirt-lengths. So basic are these aspects of women's clothes that invariably, when they alter, they do so gradually. Usually it takes at least five years of careful development to change the underlying structure of clothes. Yet, when 1937 dawned, the woman of fashion throughout the world showed the exaggerated shape she had been content to assume for several years preceding; but as 1937 faded into history she stood silhouetted in a completely new outline—easy and natural.

The 1937 silhouette is tubular in form, and follows fairly faithfully the natural contours of the feminine figure, except that it indicates the waist at a point slightly lower than normal. The silhouette of previous years was almost hour-glass in form, marked by padded, exaggeratedly wide shoulders, and a small, high waist.

Not content with changing one dress fundamental, the silhouette, 1937 also toyed with the other, and tried to alter evening hemlines. Full-cut ankle-length evening dresses were proffered in February of 1937. Probably this was a natural outgrowth of the universal enthusiasm for ballet. For the few months succeeding the introduction of the ankle-length evening skirt, various other compromise suggestions, such as evening skirts that were short in front but long in the back, were made to persuade fashionable women away from the floor-length evening skirts they had been wearing for years. But the smart women, after a half-hearted attempt to follow the designers' lead, finally rejected any change from the even floor-length skirt she has so persistently preferred to wear by night.

To sum up, then, 1937 definitely achieved a change in silhouette. It tried and failed to alter evening skirts from long to short. But it is a significant fact that, for the first time in fashion history, a single year has seen the development of two such major moves. Does it mean that in a modern world, where nothing is permanent but change, fashions too will come and go, at an accelerated pace?

Let us now look at the minor manoeuvres of fashion in 1937. The following things stand out:



A SIGNIFICANT FASHION development of 1937, a Molyneux suit with lower waistline and more tubelike silhouette

**Furs** are no longer a question of seasons. For some years they have sought, and finally in 1937 secured, a place in the year-round wardrobe of the fashionable woman. A rising popularity for long-haired furs such as blue fox has brought about in 1937 a new type of fur coat, which is bulky, chunky, even almost clumsy, in appearance.

**Jewels.**—Persistently and patiently for several years, these have been growing imaginative and immense. Daintiness is a word that has fallen into disuse so far as jewellery is concerned. Intrinsic value is relatively unimportant. The great success of the year was a pair of clips made by Cartier, in gold, enamel, and diamonds, to represent two blackamoors' heads. These were swiftly copied at popular prices, and swept the fashionable world, to die an early and inevitable death.

**Fabrics.**—A trend that has, for some time, been growing and finally, in 1937, has achieved the status of an accepted fact is that wool fabrics are now worn for evening. No longer does the convention of wool for day only, silk for evening, hold good, though silks remain overwhelmingly the preference for formal frocks. One specific fabric alone stood out as a major success in the 1937 fashion review. This was silk jersey. Launched four years ago it was not until the autumn of 1937 that it was universally worn.

**Colours** do not change. In spite of fashion propaganda, all smart women the world over prefer black. Autumn always ushers in browns, greens, and wine colours with only subtle variations in shade from year to year. Spring always means navy blue, no matter what fine differences of tone from season to season. White followed by pastels is always, saving black, the preference for evening. So in 1937, there was no dramatic change in fashionable colours. Only one new colour arrived; it was "Shocking Pink," introduced by Schiaparelli in Feb. 1937, then taken up by other designers, with the result that the vanguard of fashionable women everywhere are now seen wearing this crude, cruel shade of rose.

**Hats.**—These change so swiftly that it is hardly safe to record them. The only millinery mode that came to stay in 1937 was the return of veils. (E. PE.)

## Federal Bureau of Investigation

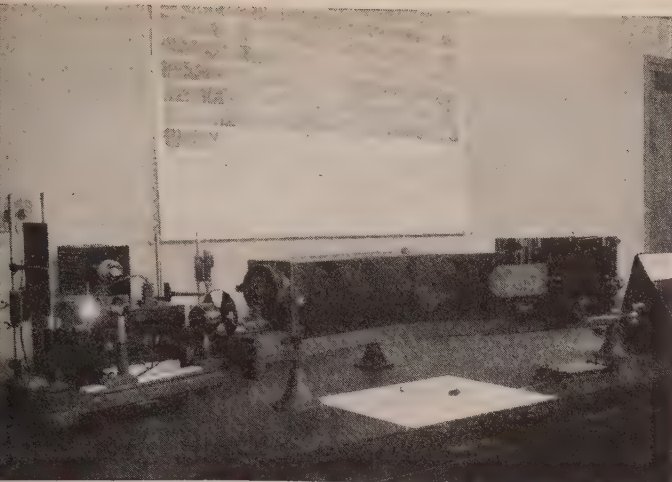
of the United States Department of Justice is charged with the duty of investigating violations of the laws of the United States, collecting evidence in cases in which the United States is or may be a party in interest, and performing other duties imposed upon it by law. The organization was established in 1908 by Attorney-General Charles J. Bonaparte. In 1910 the White Slave Traffic Act was passed, and in 1919 the National Motor Vehicle Theft Act, both increasing and extending the activity of the Federal Bureau of Investigation.

In 1924 Mr. J. Edgar Hoover was appointed director, and in this year the identification division was started with an initial collection of 810,188 fingerprint records.

A series of Federal crime bills was passed by Congress in 1933 placing additional work on the FBI. These included the Federal Extortion act, the Federal anti-racketeering statute, Unlawful Flight to Avoid Prosecution, amendment to the Federal Kidnaping Act, and power of arrest for special agents of the FBI, and authority to carry firearms.

During the 1937 fiscal year, 4,624 convictions were secured in cases wherein special agents of the Federal Bureau of Investigation performed investigative work. The sentences imposed on these subjects totalled 2 death, 13 life, and 13,322 years and 11 months while the total value of recoveries effected, fines imposed, and savings to the Government in cases investigated during this period amounted to \$41,438,370.00. The expense of operating the bureau during the fiscal year 1937 was \$5,815,598.00. Convic





SPECTROGRAPH used in crime detection by the Federal Bureau of Investigation to determine the chemical analysis of minute particles of material

ions were secured of 94.67% of all persons investigated by the bureau who were brought to trial. During the year 2,635 stolen motor vehicles valued at \$1,157,947.81 were recovered in National Motor Vehicle Theft Act cases wherein the bureau performed investigative work. Since the enactment of this act in Oct. 1919, a total of 44,756 stolen motor vehicles valued at \$27,201,463.54 has been recovered.

During the fiscal year 1937, 1,303 Federal fugitives from justice were located by special agents of the Federal Bureau of Investigation in various parts of the country. In addition, 6,223 fugitives from justice were located through the efforts of the fingerprint division of the bureau.

On July 1, 1937, there were 7,360,458 sets of fingerprint records on file in the identification division of the Federal Bureau of Investigation. A total of 1,382,666 fingerprint records was received during the fiscal year and identifications were effected on 54.4% of the criminal fingerprints received. (See also CRIME; KIDNAPPING; LIE DETECTOR; POLICE; RACKETEERING; UNITED STATES: *Crime*.) (J. E. H.)

## Federal Capital Territory

(Australia), containing Canberra, seat of the commonwealth Government, is administered under the commonwealth ministry of the interior, and includes 28 sq.mi. at Jervis bay for a possible port. Area, 940 sq.mi.; pop. (1933), 8,947; number of sheep (1935), 219,000. Canberra is linked with the New South Wales railway system by line to Queanbeyan (4½mi.). The transfer to Canberra of the staffs of the defence and postmaster-general's departments was proceeded with in 1937. The staff college was retransferred to Duntroon (Canberra). Works advanced included the erection of a main administrative block, a new hospital, a high school, housing, and extensions of the water supply and sewerage systems. Finance, 1934-35: receipts, £496,775; capital expenditure, £233,315; other expenditure, £820,819.

## Federal Home Loan Bank System

was created by Act of U.S. Congress on July 28, 1932, to provide reserve credit facilities for the principal thrift and home financing institutions of the United States. It is supervised by the Federal Home Loan Bank board composed of five members appointed by the President. The structure consists of 12 regional banks and their member institutions. The regional banks are located in Boston, New York, Pittsburgh, Winston-Salem, Cincinnati, and Indianapolis, Chicago, Des Moines, Little Rock, Topeka, Portland, and Los Angeles. Each bank is under the management of a board of directors composed

of 12 members, eight elected by member institutions and four appointed by the Federal board. In local matters the banks are largely autonomous. The Federal board, represented in its management by a governor of the Bank System, is concerned mainly with general supervision and the formation of broad national policies, and co-operates with the regional banks in raising the standards of member institutions, in promoting thrift and sound lending practices, and in encouraging the improvement of home construction.

Membership is open to lending institutions making long-term loans on homes. The present membership consists of building and loan associations, homestead associations, co-operative banks, savings institutions, and insurance companies. Institutions approved for membership must invest in the capital stock of their respective regional banks. The secretary of the Treasury was also authorized to buy stock, and at present the Government owns approximately 80% of the aggregate stock of the regional banks. It is contemplated that eventually all of the stock will be owned by the member institutions. The banks obtain their funds, beyond their capital stock, through the sale of debentures and by accepting deposits from members.

The resources of each bank are used mainly to make advances to members for the purpose of providing additional accommodations to local home owners and investors. Under certain conditions, advances for a short term may be obtained without the deposit of collateral. Long-term advances, which may run up to periods of 10 years, must be secured by approved home mortgages or other acceptable collateral. The Bank System has experienced steady and rapid growth. On Jan. 1, 1933, it had but 116 members with assets of \$217,000,000. By Nov. 30, 1937, membership had increased to 3,927 of which 2,582 were State-chartered home-financing institutions, 1,309 Federal savings and loan associations, 27 insurance companies, and nine savings banks; their assets were \$4,080,389,000. On the same date the paid-in stock of the Bank System amounted to \$165,048,991.83, and combined assets of the banks came to \$237,716,092.58. During 1936 institutions which were members of the Bank System made, according to careful estimates, about 43% of the new mortgage loans on urban residential property (houses for from one to four families), throughout the United States. In addition to their duties arising from the administration of the Bank System and the supervision of Federal savings and loan associations, the Federal Home Loan Bank board serves as the board of directors of the Home Owners' Loan Corporation and also constitutes the board of trustees of the Federal Savings and Loan Insurance Corporation. (J. H. FA.)

**Federal Income Tax:** see INCOME TAX.

## Federal Land Banks.

The 12 Federal Land Banks, operating in the United States under the Farm Loan Act of 1916 and subsequent legislation, make long-term, first mortgage loans on farms through 4,500 local, co-operative lending institutions known as national farm loan associations. Since 1933 the land banks and the local associations have operated under supervision of the Farm Credit Administration, which also supervises other Federally-sponsored co-operative institutions providing short-term production credit and loans to farmers' co-operative business organizations.

The total amount of outstanding Federal Land Bank loans, which aggregated \$2,040,000,000 on Jan. 1, 1938, plus \$815,000,000 of Land Bank Commissioner loans made by the Land Banks as agents, represented approximately 38% of the total farm mortgage debt. The Land Bank Commissioner loans, made on second as well as first mortgage security, were first authorized



in 1933 for emergency financing and will be available until Feb. 1, 1940.

The total capital of the 12 Federal Land Banks was \$233,554,360 on Sept. 30, 1937, of which slightly more than one-half was provided, and is owned by, the United States Government. The remaining amount is owned by national farm loan associations and individual farmers borrowing directly from the banks. Funds for making loans are obtained primarily from the sale of farm loan bonds to the investing public. Farm loan bonds aggregating \$1,903,039,960 were outstanding on Sept. 30, 1937.

On Jan. 1, 1938, Federal Land Bank loans were being made to farmers at an interest rate of 4% which is 1% above the rate at which the last preceding bond issue was sold. The rate of interest is temporarily reduced to all borrowers by Act of Congress.

The main influences of co-operative Land Bank financing in the United States over the past 20 years have been the introduction of long-term amortized farm mortgage loans, the gradual reduction of farm mortgage interest rates and, more recently, the "normal value" policy, that is, the use of farm earning power at normal prices of farm products as a principal factor in appraisals to offset boom or depression tendencies in determining the value of farm property for mortgage loans. (W. I. M.)

**Federal Legislation:** see CONGRESSIONAL LEGISLATION.

**Federal Power Commission:** see PUBLIC UTILITIES.

**Federal Reserve System.** Monetary conditions and policies in 1937 were the outcome of developments during the preceding five years. An active policy of monetary ease has been followed by the United States Federal Reserve System since the spring of 1932. The System increased its holdings of Government securities during 1932-33 from \$800,000,000 to \$2,400,000,000. As a result, member banks were able to retire practically all of their indebtedness at the Federal Reserve banks and in addition accumulated by the end of 1933 about \$800,000,000 of excess reserves. Following the passage of the Gold Reserve Act in Jan. 1934, and the subsequent reduction of the gold content of the dollar, gold flowed into the United States in large volume and bank reserves were greatly increased. Excess reserves rose by the end of 1935 to over \$3,000,000,000 and continued at close to this level during the first half of 1936. In July 1936, the board of governors acted to increase reserve requirements by 50% thus absorbing about \$1,500,000,000 of these excess reserves.

In Dec. 1936, the U.S. Treasury, after consultation with the board of governors, adopted a policy of placing additions to the gold stock in an inactive gold account so that member bank reserves were no longer subject to expansion from this source. At the end of Jan. 1937, the board of governors announced a second and final action to absorb excess reserves by increasing reserve requirements to the full extent authorized by law. One-half of this increase became effective on March 1 and the other half on May 1, 1937. After the final action took effect on May 1, excess reserves of member banks were still approximately \$900,000,000 and were widely distributed among all classes of member banks. The board stated, in announcing final action, that it was a precautionary step which would place the Federal Reserve System once more in a position where it could rely upon its traditional and more flexible monetary instruments of open-market and rate policy for easing or tightening credit conditions as changing circumstances might require.

At the turn of the year 1936-37 the previous prolonged advance in high-grade bond prices ceased and early in 1937 there was a decline, due to a number of factors, including possibilities of an inflationary development. Bond prices in England had

already begun to decline. There had also been an overloading of the new issues market with offerings of bonds bearing exceptionally low coupon rates and some of these were overhanging the market. Prices of high-grade municipal and corporate bonds had declined for some weeks before there was a marked decline in U.S. Government obligations. Under these conditions banks and other investors with substantial paper profits on their bond holdings began to sell in order to realize these profits. After prices began to decline others sold to avoid losses. A few large money-market banks in making adjustments in their reserve positions to meet increased reserve requirements also contributed to this movement.

Because of development of disorderly conditions in the bond market in March, and in accordance with the purpose of relying upon open-market operations for meeting changing credit conditions, the System through the Open Market Committee at first purchased Government securities of longer maturities that showed weakness and disposed of securities of shorter maturities, without changing the total holdings in the open-market account. This was followed by the outright purchase of \$96,000,000 of Government securities in the open market, which were added to the account. Conditions in the bond market became steady early in April and the decline in Government security prices ceased.

Throughout the year banks had sufficient funds to care easily for credit needs of business. In August it appeared, however, that during the autumn the usual seasonal demands for currency and credit might result in tighter credit conditions which might lead to further liquidation of assets. Prices of stocks and of basic commodities, moreover, were showing further declines and evidences of weaknesses in the business situation were becoming increasingly apparent. Therefore during August and the early days of September the Federal Reserve banks reduced their discount rates. After these changes were made the rate of the Federal Reserve Bank of New York was 1%, the lowest central bank rate in history, and at the other Federal Reserve banks 1½%. The board also issued in September a revised and liberalized Regulation A, relating to advances and discounts by Federal Reserve banks for member banks, in accordance with changes in the law made by the Banking Act of 1935.

In September, at the request of the board of governors, the Treasury released \$300,000,000 of gold from its inactive account and at the same time the Reserve System announced that it would be prepared to buy additional Government securities in order that seasonal demands for currency and credit would not have the effect of tightening credit conditions. The release of gold was made by the Treasury about the middle of September and the proceeds were immediately expended. The additional reserves thus provided went mostly to banks in New York city and in Chicago, which generally bear the brunt of seasonal increases in credit demands. In November, in anticipation of holiday currency demands, the Federal Reserve System purchased \$38,000,000 of Government securities in the market. Partly because of action taken by the Treasury and the Reserve System and partly because the seasonal credit and currency demands were smaller than usual, owing to the recession in business that developed member banks were able to meet the seasonal demands without pressure on their reserves.

In October the board of governors reduced margins required on security loans both by banks and by brokers from 55 to 40%. The higher margins had been imposed early in 1936 at a time when security prices were rapidly advancing and security loans were increasing. The fact that the margins had been high had resulted in a smaller amount of margin calls and less forced liquidation when security prices declined, than would otherwise have been the case. When the decline in security values continued, because



of a change in the business outlook, the board eased conditions for the purchase of securities by a reduction in the required margins.

Credit conditions continued to be extremely easy. Excess reserves of member banks averaged over \$1,000,000,000 during the last three months of 1937, an ample amount to meet all current and prospective demands for credit. Private and institutional investors also held a large volume of idle funds. Short-term money rates and customers' rates of banks in leading cities were close to their all-time lows. Yields on long-term Government securities and on high-grade municipal and corporate bonds, which had increased during the first part of the year, declined later and at the end of the year were exceptionally low in relation to levels prevailing prior to 1936. Monetary and credit conditions at the close of the year continued to be favourable for encouragement of business activity and general economic recovery. (M. S. E.)

**Federal Theatre** is a project of the United States Works Progress Administration, organized under the Emergency Relief Appropriation Act of 1935 to give employment to needy professional theatre people. Payment at a security wage is less than the prevailing pay for corresponding work in industry, but adjusted, through hours, to meet that wage. Nine out of ten employed come from relief rolls. Nine dollars out of ten must be spent for wages, leaving only one dollar out of ten to meet all theatrical and operating costs. At the outset of the program 12,700 people were employed in 29 States. Through decreased congressional appropriation and the return of many theatrical people to private industry employment in January 1938 was 8,905 in 20 States. Directors and designers have consistently offered an ambitious program of classical and modern plays, dance dramas, marionette shows, musical comedies, children's plays, and cycles by such distinguished dramatists as Eugene O'Neill and George Bernard Shaw.

The Federal Theatre has invented the technique of the "Living Newspaper," a terse cinematic type of production dealing with such social and economic subjects as agriculture, power, flood control and housing. Through its playwriting and research divisions the Federal Theatre is conducting experiments in the fields of writing, design and light. It also provides script, advisory, and publication service for great numbers of community theatre groups.

Sponsorship is wide and varied, and includes theatrical and other unions; universities; churches, Catholic, Jewish, and Protestant; civic and community groups; and a great following of youth never before able to afford theatre-going. Critics have come to regard the Federal Theatre as a People's Theatre. (H. FL.)

**Federal Trade Commission.** This commission deals with conditions in interstate commerce relating to monopoly and unfair methods of competition in the United States and makes investigations into the organization and practices of business corporations, except common carriers and banks.

The commission's functions were increased in 1936 by the Robinson-Patman amendment of the Clayton Act further restricting price discrimination, quantity discounts and certain other indirect kinds of discrimination. On the other hand, the Miller-Tydings amendment of the Sherman Anti-Trust Act, in 1937, limited the commission's jurisdiction regarding resale price maintenance in inter-State commerce affecting sales made in States following that practice. During 1937 (up to December 1) there were 299 cases in which complaints had been issued which were finally disposed of by the commission. In 232 of these cases in-

junctive orders were issued, among which may be noted the following: (a) for price fixing—viscose rayon yarn manufacturers, National Electrical Manufacturers Association, water works valve and hydrant manufacturers; (b) for price discrimination—window glass manufacturers; (c) for brokerage discrimination—Biddle Purchasing Company; (d) for boycott—metal roofing and air-conditioning contractors. In this same period, seventeen decisions were rendered by Federal courts on appeals from orders of the commission. One case was declared moot, without decision on the merits. In an inquiry ordered by Congress, National Biscuit Company declined to furnish the commission with certain information called for, particularly the amount of sales. Mandamus proceedings were resisted and the Federal court in New York handed down a decision, February 16, 1937, in favor of the commission. No appeal was taken. Numerous trade practice conferences with various business groups resulted in the establishment of specific rules of fair dealing.

The general investigatory authority of the commission was exercised during 1937 under two Congressional resolutions. The first dealt with agricultural income and income of the principal manufacturers and distributors of farm products, monopolistic or unfair practices of manufacturers and distributors, portions of the total consumer cost going to different factors of production and distribution, agricultural co-operation, etc. In conclusion, three reports were submitted to Congress during 1937. The second resolution called for information regarding restraints of trade and unfair methods of competition in the farm machinery industry, the costs, prices and profits of manufacturers and distributors, etc. This inquiry was not completed at the close of the year. By executive order, an inquiry was begun in Nov. 1937, into the cost of living. (See also CHAIN STORES.) (FR. W.)

**Federated Malay States,** area 27,540 sq.mi., population (1937) 1,961,397, are one of the three main subdivisions of British Malaya, the others being the Straits Settlements and the Unfederated Malay States (*q.v.*). There are four Federated Malay States, Perak, Selangor, Negri Sembilan and Pahang, of which the first three are on the west coast of the Malay Peninsula, while Pahang is on the east coast. Each State is administered under the advice of a resident, who is subject to the instructions of the High Commissioner, who is also governor of the Straits Settlements. The seat of the Federal Government is at Kuala Lumpur (Selangor), the largest town in the States, with a population of 127,124. The Federated Malay States contain 1,068mi. of railway and 2,916mi. of metalled roads. They constitute the immediate hinterland of the two main ports of the Straits Settlements, Singapore and Penang, and are rich in minerals and raw materials, especially tin and rubber. Other important products are coconuts, oil palms, rice and pineapples; and there are deposits of coal and gold. Chinese labour is largely employed in the tin mines and there are many Indian workers on the rubber plantations. The Malays devote themselves more to hunting, fishing and agriculture. The tin and rubber industries experienced great difficulties because of the precipitous fall of prices in 1931 and 1932. World restriction schemes, combined with the improvement in general economic conditions brought about a gradual recovery, and in 1936 there was even a mild boom. (W. H. CH.)

**Federation of Labor, American:** see AMERICAN FEDERATION OF LABOR.

**Feldspar.** Almost the entire commercial utilization of the feldspars is in the ceramic and glass industries. The United States is the world's largest producer and consumer,



followed by Sweden, China and Norway, with a number of minor producers. World production is of the order of 350,000-400,000 metric tons, of which the United States contributes somewhat more than half. The 1936 consumption in the United States was about 51% in glass, 32% in pottery, 10% in enamel and sanitary ware, 3% in brick and tile, and 2% in electrical porcelain, leaving 2% for miscellaneous uses, most of which are of a ceramic character. Production in 1936 had almost doubled over the 1932 low, but was still slightly below the pre-depression high. (G. A. Ro.)

**Fencing.** Fencing has many enthusiastic followers in the United States. The chief governing body is the Amateur Fencers League of America, headquarters in New York, having 971 members in 18 divisions scattered throughout the country; there are also about a dozen more fencing leagues of lesser importance. The officers of the A.F.L.A. for 1937 were Harold Van Buskirk, president; James Warner Bellah, vice-president; John Howard Hanway, treasurer; Dernel Avery, secretary. Dr. Graeme M. Hammond, one of the founders of the League in 1891 and its president until 1925, who retains an active interest in the sport, is president emeritus of the American Olympic Committee.

The sport of fencing is rapidly expanding in scope and interest by its introduction into high schools and colleges and the establishment of private fencing salles to supplement the fencing clubs. The A.F.L.A. developed a new electrical mechanism in 1937 to be worn by épée fencers to register each touch. The national rankings for 1937 in the League were: foil, Joseph L. Levis, Jose R. de Capriles and Dernel Avery; épée, Lt. Thos. J. Sands, Tracy Jaeckel and Andrew Boyd; sabre, John R. Huffman, Normal C. Armitage and Jose R. de Capriles; women's foil, Helene Mayor, Carol Alessandrini and Dolly Funke. (J. B. P.)

**Great Britain.**—Fencing has passed through a momentous year, important moves having been made in connection with the sport. A recent census, the first ever taken, showed that there are now something like 3,500 fencing enthusiasts in Great Britain.

There has also been what practically amounts to a complete reorganization. This has included the formation of various subcommittees of the Committee of the Amateur Fencing Association, and the formation of a North and Midlands Section, with headquarters at Birmingham.

Another important item has been the adoption of a new edition of the Rules of Fencing, derived from a translation of the International Rules. The publication *World Sports* has been adopted as the official organ of the A.F.A., and a quarterly news bulletin is now issued to all affiliated clubs. It is hoped, by means of these changes and innovations, to put fencing in Great Britain on a thoroughly organized and common basis. The effort in this direction was given timely encouragement when the Association received royal patronage for the first time.

A full team was sent to the World Championships in Paris, but the results did not quite fulfill expectations. The London Fencing Club this year established a precedent by "housing" the winners of the three major championships: J. Emrys Lloyd won the foil championship, C.-L. de Beaumont the épée championship, and R. F. Tredgold the sabre championship. The Miller-Hallet International Épée Cup was won by J. Bruneau, of Belgium.

**Fernando Pó:** see SPANISH WEST AFRICA.

**Fertilizers.** The use of commercial fertilizers in world agriculture shows notable and persistent increase. A recent study, covering 40 years, of 14 great wheat-growing regions shows that the trend of yield is upward in all regions where

fertilizer application is standard practice, and downward in all others. For example, it is upward in Western Europe, downward in South-eastern Europe; upward in Australia, downward in South America; upward in Eastern United States, and downward in the prairie provinces of Canada and the prairie States south of them. Other great crops, notably cotton, show like trends.

Fourteen elements are held essential to plant growth. These are: nitrogen, phosphorus, potassium, calcium, carbon, hydrogen, oxygen, magnesium, iron, sulphur, manganese, boron, copper, and zinc. The carriers of nitrogen, phosphorus, and potassium are considered the most indispensable ingredients in commercial fertilizers because most farm soils are deficient in these elements. Likewise, crops remove them and calcium in larger quantities than the other ten. Carbon, hydrogen, and oxygen are obtained by plants from air and water. With continued cropping it has become progressively apparent that certain soils are deficient in one or more of the remaining seven elements, now commonly referred to as the minor or trace elements. As a rule, it is necessary to add only relatively small amounts of the deficient elements.

Many symptoms in growing plants that had been considered due to some disease or fungus growth were found to be caused by lack of one of the minor elements. Magnesium deficiency causes the condition known as "sand drown" in tobacco; manganese deficiency causes chlorosis in tomatoes and other crops; boron deficiency causes "black heart" in mangels and sugar-beets and "cracked stem" in celery; while zinc deficiency causes "mottle leaf" of citrus trees.

In recent years much progress has been made in determining the best methods of application and placement for numerous crops. Generally speaking, the closer the fertilizers can be put to the seed without damaging germination, the better the results. Outstanding manufacturing developments are: treatment of superphosphate with anhydrous or aqua ammonia, fixing the ammonia in the form of an ammonium phosphate; continuous processes for the manufacture of superphosphate, supplanting the old intermittent or batching processes; and granulation of fertilizers and fertilizer materials.

World consumption of pure nitrogen in agriculture was 1,460,000 metric tons for the year ended June 30, 1928, as compared with 2,344,000 tons ten years later. World production of superphosphate was 14,065,000 metric tons in 1927, and 15,622,000 tons in 1936. World production of potash was 1,997,000 tons of K<sub>2</sub>O in 1927, and 2,402,000 tons in 1936. (See also POTASH.)

(C. J. Br.)

**Fiction:** see AMERICAN LITERATURE; AUSTRALIAN LITERATURE; BELGIAN LITERATURE; CANADIAN LITERATURE; DUTCH LITERATURE; ENGLISH LITERATURE; EUROPEAN LITERATURE; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; RUSSIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH AMERICAN LITERATURE; SPANISH AND PORTUGUESE LITERATURE

**Field Hockey,** a very ancient game, is widely played in Europe, most of the British Empire, Japan and to some extent in other countries. Primarily a men's game, it is now played quite generally by women under practically the same rules. Although England is regarded as the birthplace of modern hockey, the game has reached its greatest development in British India where it is played by hundreds of thousands of persons, both in the army and in civilian life. Teams representing British India won the Olympic championship in 1928, 1932 and 1936.

The modern version of the game was taken up in the United States first by women shortly after the turn of the century. Men did not take it up until about 1926. Consequently, although field hockey is played by a great many girls' school, college, and club



teams, there are as yet only a few men's teams. The men's clubs are located chiefly in and around New York, Philadelphia and Baltimore. The game is also played informally at a number of men's schools and colleges. The men's sport is governed by the Field Hockey Association of America which is affiliated with the American Olympic Association and the Fédération Internationale de Hockey. Men's teams representing the United States competed in the Olympic games of 1932 and 1936. With a view to keeping field hockey on the strictly amateur basis on which it exists throughout the world, the Field Hockey Association of America follows the example set by the board governing the sport in England and does not sanction any leagues, cups or national championships.

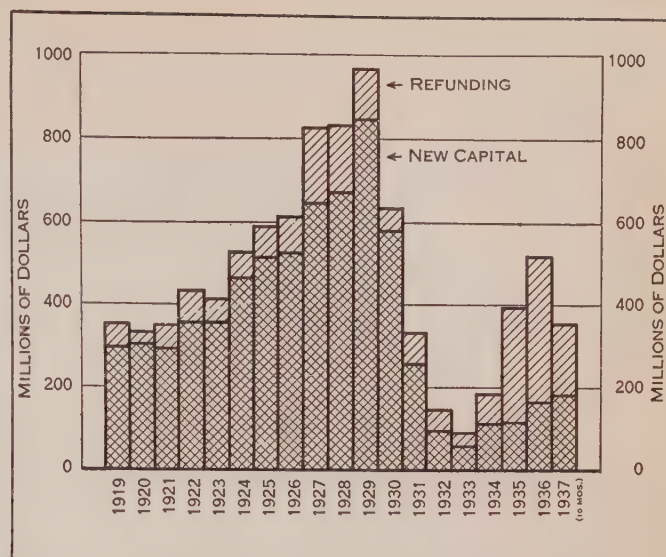
Women's field hockey is governed by the United States Field Hockey Association in co-operation with a hockey committee of the women's section of the American Physical Education Association. Each year a conference is held, usually in late November, for the discussion of rules and matters pertaining to the players' welfare. At the same time the national association conducts a round-robin tournament for sectional teams in its membership. No championship is involved, the purpose being to select an all-America team from among the regular and reserve teams participating. In 1937, at Winnetka, Ill., the South-east, North-east, Mid-west and Great Lakes competed, and the South-east's first team was the only unbeaten contestant. (H. K. G.)

**Field Museum:** see NATURAL HISTORY MUSEUMS.

**Field Sports:** see TRACK AND FIELD SPORTS.

**Fiji.** Crown colony of the British Empire. Governor, Sir Arthur Richards, K.C.M.G., who is also high commissioner for the western Pacific. It comprises some 250 islands (about 80 inhabited) between lat. 15°S. and 22°S. and long. 177°E. and 178°W. Total area, 7,083 sq.mi.; pop. (census, April 1936): Europeans, 4,028; Fijians, 97,651; Indians, 85,002; others, 11,698; total 198,379. Capital, Suva; pop. (1936), 15,522; regular port of call for mail shipping between New Zealand and North America. Finance (1936): revenue, £796,630; expenditure, £677,152. Trade (1936): imports, £1,501,854 (from U.K., £526,690); exports, £2,135,427 (to U.K., £842,874). A new constitution was introduced in 1937: the legislative council now consists of the governor, 16 official members, five Europeans, five Fijians selected by the governor from a panel submitted by the Great Council of Chiefs, and five Indians. The executive council consists of the governor, five chief civil servants, and two nominated unofficial members. (See also PACIFIC ISLANDS, BRITISH.)

**Filene, Edward Albert** (1860-1937), Boston merchant and student of economic organization, was born at Salem, Mass., Sept. 3, 1860. After a high school education, he entered the Boston department store of William Filene's Sons of which he was ultimately to be president. It was his interest in the study of means for economic betterment, however, which won him national recognition. In addition to participating in the establishment of the Boston, United States and International Chambers of Commerce, he established the Twentieth Century Fund in 1919, contributing over a million dollars for the study of economic problems. Long before the New Deal, he championed measures for re-organizing the capitalistic system in order to increase the buying power of the public. As a result, he urged such advanced plans for economic re-adjustment as distribution of wealth through increased wages, unemployment and old age insurance, regulation of hours and wages and co-operative buying. His chief interest was in the consumer credit movement, he being both founder and president of the Credit



SECURITIES ISSUED in the United States: monthly average (Federal Government issues not included). Lower part of column shows new capital; upper part, refunding. Compiled by *Commercial and Financial Chronicle*

Union National Extension Bureau which directs the organization of co-operative credit associations in both the United States and Canada. Although active in Washington during the World War, he turned his attention to peace efforts immediately thereafter, receiving several European citations for financing the European peace awards of 1924. In more recent years, however, he became discouraged at the ineffectiveness of peace agencies and urged the voluntary surrender of raw material monopolies as a necessary step to avoid conflicts. It was during one of his frequent trips to study European conditions that he died in Paris, Sept. 26, 1937.

**Financial Review.** The outstanding fact in the financial history of 1937 was the fall in commodity and share prices after a rapid rise in the first three or four months of the year. This fall of prices had important secondary reactions on international capital movements, exchange rates, public finances, rates of interest, etc. In Great Britain, wholesale prices (1929=100, *Economist* index) rose to 94.4 in March from a level of only 80.7 in Oct. 1936. By Nov. 1937, the index had dropped to 77.0. In the United States, the peak occurred later, with the index (Bureau of Labor, 1926=100) at 88.0 in April, and the fall was less marked, only five points being lost by mid-November. Statistical differences, however, largely vitiate such international comparisons. In fact, practically all raw commodities entering into world trade suffered a sharp fall of price after April 1937.

One striking consequence was a complete reversal of the trend in the international control of the supply of primary commodities. At the beginning of 1937, the authorities of most restriction schemes were relaxing and often releasing altogether their restraints on supply, in an anxious attempt to forestall shortages or speculative price inflation. Thus the International Tin Committee raised the permissible quota after the first quarter of the year to 110% of standard tonnages, an unattainable figure for most countries in the scheme. A series of attempts to overtake rising prices brought the rubber quota from 65% for the second half of 1936 to 90% for the second half of 1937. The copper committee temporarily removed all restriction in Jan. 1937, but reimposed it in November at the rate previously ruling. The rubber quota for the first quarter of 1938 was fixed at 70%, and the tin quota was cut at one blow from 110% to 70%. Yet the prices of all these commodities remained much lower than they



had been at the beginning of 1937.

The causes of the fall in prices are relevant here only in so far as they had a financial character. Among the proximate causes was the so-called gold scare. The high price of gold established by currency devaluation attracted a rising output of the metal, whereas the monetary outlets for it were strictly limited. Between 1930 and 1936 world output of gold rose from 21,000,000 oz. to 35,000,000 ounces. By far the greater part of this gold found its way indirectly to the United States. At considerable cost to the American Treasury, most of it was sterilized, that is to say, not allowed to serve as a base for currency inflation. The American buying price of \$35 a fine ounce was the only fixed pivot (bar the small Belgian market) in the relations between the principal currencies and gold. At the beginning of April 1937, the arrival in London of large consignments of gold from Russia was followed by rumours that the United States Treasury intended lowering its buying price. The rumours were promptly denied in Washington, but gold-mining shares and international securities remained depressed, and the disturbance began to spread to other security and commodity markets.

The reason for this extension was twofold. First it was thought that, just as the high price for gold had been associated with rising commodity prices, so a reduction in the price for gold would somehow lead to a lower general price level. Secondly, there had been widespread speculation, both professional and public, in commodities as well as stocks and shares. When one speculative market sustained losses, these often had to be covered by liquidation in other markets. An illustration was the reaction in London to the National Defence Contribution (*q.v.*). This graduated company income-tax had no direct relation to commodity markets, yet it was followed by a recession there as well as on the stock exchange. The gold scare itself may similarly be regarded as a signal rather than a reason for the fall of commodity and stock prices (except, of course, those of gold shares). Speculative buying in earlier months had driven the prices of many commodities above the levels indicated by costs of production, rates of supply and probable consuming power of industry or private consumers.

The gold scare was violently renewed at the end of May. Hoarded gold was flung on the London market, and the greater part of it found a buyer only in the Exchange Equalization Funds (*q.v.*), which bought £4,000,000 of gold on June 4 alone. On that day President Roosevelt flatly denied that his Government's policy had changed, and the scare gradually died down. Partly as a result of the strain put upon it by purchases of gold, which exceeded £92,000,000 net between March 30 and Sept. 30, the Exchange Equalization Account was raised by £200,000,000 to £575,000,000. By November, the position had been completely reversed: gold commanded a premium in London against the parity with the dollar; hoarding had been renewed, and there were even rumours that the dollar might be further devalued.

Meanwhile, however, great changes had taken place in the structure of commodity and more especially stock market prices. On March 10, 1937, the price index of industrial common stocks on Wall street (Standard Statistics Company, 1926=100) touched a peak of 155.7, compared with an average of 127 for the whole of 1936. In May, the average was down to 137, and after a series of oscillations the fall was renewed after August. On Nov. 24, the index dropped to 86.7. On the London market, though the fall began earlier, it was less severe. The ordinary shares index (*Financial News*, July 1, 1935=100) reached its peak of 124.8 on Jan. 4, and fell to 93.1 on Nov. 22. Both in London and in New York there was some recovery in the last few weeks of the year. Although 1937 saw a certain depression of fixed-interest securities also (the yield on British 2½% Consols, for instance, rose during the year from £2 19s. to £3 7s.), this section of the

market often showed strength when the more speculative sections were weak. The depression in industrial securities therefore seems to have been due to business apprehensions, and to the liquidation of speculative positions, rather than to any general financial stringency.

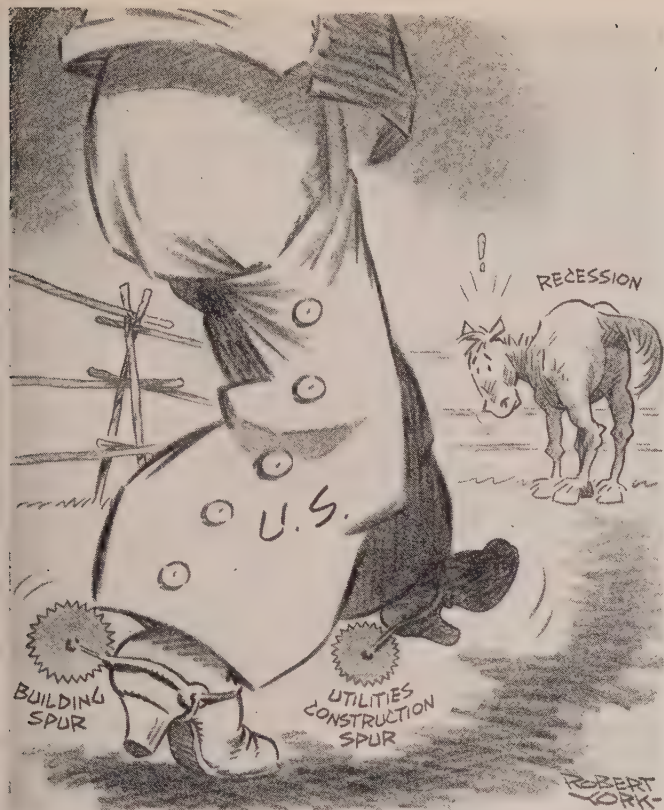
Indeed, easy monetary conditions continued throughout 1937. The New York Federal Reserve Bank, on Aug. 26, reduced its rediscount rate from 1½ to 1%—the lowest level ever established by any central banking institution. On Jan. 30, the Federal Reserve Board had announced increases in the reserve requirement for member banks, designed to immobilize some \$1,500 millions of excess reserves which the board regarded as superfluous for the needs of commerce, industry, or agriculture, and as capable of causing an injurious expansion of credit. Nevertheless, member bank excess reserves totalled \$1,160 millions at the end of 1937, compared with \$1,950 millions at the beginning of the year. The Bank of England discount rate remained at 2% throughout the year, and the market rate on Treasury bills was maintained above ½% only by dint of special arrangements between the money market and the banks, and among the money market operators themselves. The Netherlands and Swiss bank rates were likewise unchanged in 1937, at 2% and 1½% respectively. The Bank of France discount rate, which began the year at 2%, was raised to 4% in January and to 6% in June in order to counter the external weakness of the franc. Thereafter, however, it was progressively reduced to 3%.

The belief that the devaluation of 1936 would bring stability to the French franc and reverse the flow of capital from France was shattered in 1937. The economic reforms introduced by the Popular Front Government, and the persistence of budget deficits, continued to frighten capitalists, while the competitive advantage for French trade was nullified by the rise of internal costs. The French Exchange Fund suffered heavy losses of gold, and



"HERE'S THE TIRE! YOU GET THE JACK!" The building movement to speed business recovery calls for some co-operative effort, so Elderman depicts in *The Washington Post*





"TWO OF THE WHEELS OF RECOVERY," as York of *The Louisville Times* sees the business recession in the United States

neither the raising of the Bank of France discount rate nor the formation of a new government under M. Chaumets allayed anxieties. Indeed these events stimulated rumours of an impending further cut in the gold value of the franc. By June, the exchange value was equivalent to the lower gold limit (corresponding to roughly 110 francs to the £) that had been prescribed by the post-devaluation monetary law.

The rumours caused a large discount to appear on the forward franc. On June 29, dealings in francs were suspended in London and New York; French financial markets were closed; and a Plenary Powers Bill passed the finance committee of the French Chamber, after an admission by M. Bonnet, the finance minister, that the Government had only 20,000,000 francs of ready money at its disposal and that the outflow of gold since June 23 had totalled 2,500 million francs. On the following day, the Plenary Powers Bill passed into law, the limits on devaluation were repealed by decree, and the Government announced that the franc would be left to find its own level, subject to the control of fluctuations by a stabilization fund.

When the markets were reopened on July 1, the franc was bought and sold at 129 to the pound. The British chancellor of the exchequer and the secretary of the United States Treasury sent messages indicating that they regarded the Tripartite Monetary Agreement of Sept. 1936 as still in force, and that they would continue to co-operate with the French monetary authorities. Later in July, as capital was still leaving France, the franc was weak, and touched 135 to the pound, but until mid-September the rate stayed near 133. On Sept. 10, and again on Sept. 16, there was a serious break, and after another pause the rate jumped on Oct. 2 to 151½, the lowest sterling value recorded for the franc since 1926. This, however, was the worst rate of the year. At the end of 1937, the franc was worth 147¼ to the pound.

The strength or weakness of the franc followed in the main the

movement of capital for short-term investment (known generally as "hot money") to or from France. There were brief periods in the earlier part of 1937 during which refugee capital returned, but the flow did not take a definite inward trend until the last quarter of the year. In six months, so M. Bonnet told the Senate at Christmas when defending his budget estimates, the Bank of France had gained 10,000 million francs of gold. Of this, 4,000 millions had been furnished by the stabilization fund from its purchases, and 6,000 millions had been released from serving as collateral for a credit of £40,000,000 for the French railways, which had been opened by a London banking group in January and had been fully repaid. M. Bonnet was budgeting for a small surplus in 1938; the extraordinary budget, however, would carry on loan account over 14,000 million francs of expenditure on armaments and public works.

Movements of "hot money" were more important in international balances of payments in 1937 than any long-term capital migration. Even the speculative investment of non-American money in Wall street, which had been outstanding in 1936, fell to an insignificant figure, and the latter part of the year saw some liquidation of earlier investment of that kind. On the other hand, in the six months ended June 30, United States banking funds abroad declined by \$55,000,000, and foreign banking funds in the United States increased by \$708,000,000. There were practically no new foreign issues in the United States in 1937, and such issues in London totalled only £27,400,000, including £21,100,000 for British Empire countries.

The year brought mixed news for markets in foreign bonds. Higher commodity prices and general recovery in the earlier months caused several debtor countries to increase their payments. Better returns from copper and nitrates, for instance, raised the sum available for service of Chilean bonds. The League Loans Committee in London reported in September that all the countries that had been in partial default on League loans, with the exception of Greece, were paying more. A permanent revision of the Hungarian 7½% loan on a lower interest basis was recommended to bond holders by the committee. Greece, which up to March had been remitting 40% of the interest due, had failed to make what the committee regarded as a reasonable proposal for a permanent settlement, offering to pay only 50% and to establish after five years a 60-year sinking fund. This offer had been rejected and withdrawn. Apart from the League Loans, Poland increased the extent of her default early in 1937. On Nov. 10 the promulgation of a new constitution in Brazil by President Vargas was combined with suspension of payment of all interest and amortization on external debt. It was announced that the question of future payment would be examined immediately, preference being given to countries with which Brazil had a favourable trade balance. A further blow to foreign bond holders was the war in China, which resulted in a fall in Chinese 5% bonds (1913) from 95 to 65 on the London market in the course of 1937, and of Japanese 6% bonds from 88½ to 64.

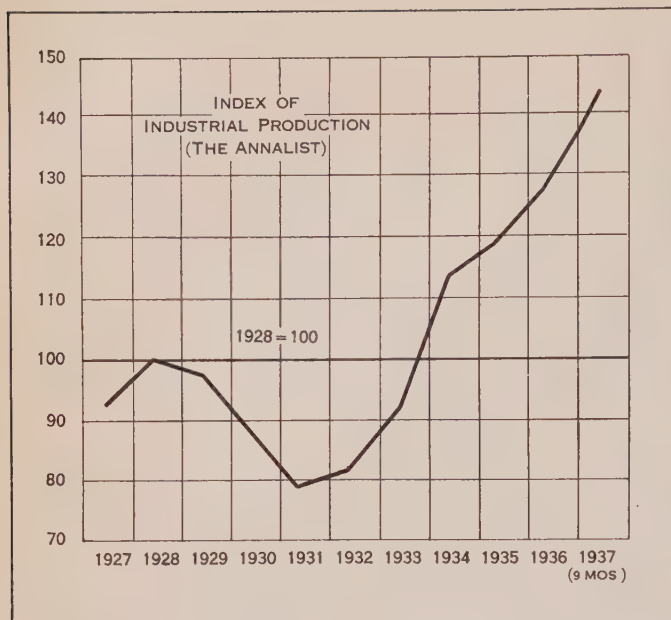
(H. V. H.)

**Fine Arts:** see PAINTING; SCULPTURE; etc.

**Finland,** republic of northern Europe, N.W. of Russia, member of the League of Nations. Capital, Helsinki (Helsingfors, seaport; 277,771). President Kyösti Kallio (born 1873; elected 1937). National flag, blue St. George's cross, with arms central, on white.

**Area, Population and Cities.**—Area: 134,557 sq.mi. (+13,254, inland water), divided into 9 departments; population: (1930) 3,667,067, predominantly Evangelical Lutheran (national church, though conscience is free); three million speak Finnish, 10% Swedish. Towns (1935); Turku (Åbo), seaport, 69,953; Tampere





FINLAND: Industrial production

(Tammerfors), 59,832; Viipuri (Viborg), 72,755; five others exceeded 20,000.

Education figures: (1935) 10,694 primary schools, 342,256 scholars; 216 secondary, 49,621; (1936) in Helsinki, Turku (Swed.) and Turku (Finn.) universities, 7,246.

**History, Trade, Finance, and Defence.**—The president is elected for six years by vote of the citizens, the House of Representatives (200; Social-Democrat majority) by adult suffrage (over 24) and proportional representation; there is a Council of State (1937: Professor A. K. Cajander, premier, and 10 ministers). At Helsinki (April) Finland and neighbouring Powers conferred on the arms industry. Baron Mannerheim, Finland's liberator, celebrated (June) his 70th birthday. Amicable relations with Soviet Russia were consolidated at Moscow.

Though only 6.6% of the land is cultivated, 60% live by it, forests being valuable. Wood, pulp, and paper furnish industries (others: engineering, textiles) representing, with animal produce, leading exports. Imports (1936): 6,343.4 million mark. (£28,148,000); exports, 7,215.1 (£32,067,000), increased in half—1937. Great Britain takes over half. Air-travel is developing.

Currency unit: *Markka* (at par, 193.23 mark. = £1 = \$4.87). Budget (1937 estimate): 4,68.37 million mark. Notes (Bank of Finland, over one-third gold-covered): 1,630 million mark.

Army (conscript): 1,824 officers, 29,500 others; civic guards: 100,000; navy: 2 coast defence, 5 submarine. (See also INTERNATIONAL LAW: *Private Property*; *WATER POWER*.)

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**Finsler Comet:** see ASTRONOMY: *Solar System*.

## Fire Insurance.

As the year 1937 progressed, indications were that the low loss record of the previous four years would probably continue and as a result certain trends developed. First and foremost of these was the general plea for a reduction in the rates of fire insurance. In many instances, reductions were considered and granted through the central organizations of the fire insurance business. In others, governmental authorities were active and did not hesitate to suggest reductions which were often made, usually after conferences with the officials.

There appears to be developing a marked tendency to seek to fix the fire insurance rates for the succeeding year on the ex-

perience of the previous five years. It so happens that, due to the low loss ratio and the lack of any outstanding fires which could be considered conflagrations, this tendency is resulting in a downward revision of rates and it is a safe statement to make that the average rate for fire insurance decreased probably 5% during 1937. The effect of this close connection between the rate and the previous five years' experience cannot be predicted for the future. A severe conflagration, such as the great fire at San Francisco in 1906, would change the whole picture; if it did not increase the rates, it would probably stabilize them for some years to come. This tendency in regard to the rate is world-wide.

The second outstanding feature of 1937 was the more complete development of the method of writing what may be called "auxiliary" or "accessory" lines. The policy of fire insurance is strictly limited by its terms to the indemnification of the insured for the value of the property damaged or destroyed by fire. Unless additions are made to the policy by endorsement or unless the policy is supplemented by independent contracts, other forms of loss are not covered.

The point has now been reached where by an endorsement to the fire policy, known as the Extended Coverage Endorsement, losses from the following causes may be covered in addition to the loss from fire and as a part of the regular fire policy: wind-storm, cyclone, tornado and hail, explosion, riot, riot attending a strike, aircraft, smoke, and vehicles.

Another development during 1937 was the passage by the State of Illinois of its new insurance code. This represented the work of two or more years and, by and large, is considered very satisfactory. It will no doubt have an influence on the revision of other codes now being considered. (E. R. H.)

## Fires and Fire Losses.

An underwriting profit in fire insurance represents the difference between the amount of premiums received and the amount paid for losses plus all other expenses of whatever form or nature, not including dividends of course. As a rough measure, a loss ratio of 50% may be considered as one on which the business can be carried forward satisfactorily. A few years ago before taxes had increased as they have in the past five years, a loss ratio of 55% might have been considered as not unduly excessive. It so happens that during the last five years the loss ratio in fire insurance, world-wide, has been less than the stipulated 50%. The results, therefore, have been favourable to the business, the increased taxation and the depreciation in security values being thus compensated for in part.

In the year 1937, \$800,000,000 is a fair estimate of the amount of premium receipts in fire insurance throughout the world and 40% of that is a fair estimate of the losses incurred on the same world-wide basis. In the United States the mutual system of insurance is very highly developed and the loss ratios of the mutual fire companies ran practically the same as those of the stock companies.

It is an interesting fact that while severe fires do occur all over the world, nevertheless, the large amounts involved are averaged down by the small losses which make up the largest percentage of fire losses. In Great Britain the notable losses usually occur in mansions, the factories being fairly well protected on the whole; while in the United States the most severe losses are apt to occur in manufacturing or mercantile properties, although the rapid extension of the best types of protection is tending to eliminate large losses in these properties also. (E. R. H.)

**Fire-Walking:** see PSYCHICAL RESEARCH.

**First Century Christian Fellowship:** see OXFORD GROUPS

**First Narrows Bridge:** see BRIDGES.





COLUMBIA RIVER fishing fleet opens salmon season, with 300 boats putting out from Astoria, Oregon, in a mass demonstration of the river's salmon industry

**Fisheries.** The fisheries of the world, according to tabulations compiled by the U.S. Bureau of Fisheries, annually yield about 15 million tons of 2,000lb. each, of food or products used in the arts and industries, with a value of about \$716,000,000. Of this amount, the fisheries conducted in the North Atlantic area by bordering countries produce about 5,900,000 tons, valued at \$350,000,000; with the production by Eastern North Atlantic countries amounting to 4,700,000 tons, valued at \$302,000,000 and by Western North Atlantic countries to 1,200,000 tons, valued at \$48,000,000.

The species of importance taken in the North Atlantic area are herring, cod, haddock, mackerel, halibut, swordfish, crabs, shrimp and oysters. During recent years the abundance of several of these species has declined, due to over-fishing or other causes. Recognizing that this is a serious threat to the livelihood of thousands of fishermen and shoresmen, steps have been taken by the Governments of various countries to conserve several of these important species.

On the Eastern North Atlantic the situation is particularly serious, since fishing vessels must now travel great distances from the home port to obtain a catch. These longer voyages entail increased costs, not only in the operation (fuel, upkeep, etc.) of the vessels, but also for icing or refrigerating the fresh fish brought to port. In an effort to improve conditions, various conservation and economic measures were suggested during the past year. As regards conservation measures a convention was signed during the past year on behalf of the Governments of Belgium, Denmark, Germany, Great Britain, Iceland, the Irish Free State, the Netherlands, Norway, Poland, and Sweden. This convention, among other things, regulates the size of the meshes

of otter trawls and seine nets fished from vessels of the signatory countries in certain waters of the Eastern Atlantic. It is hoped that through regulations under this convention the fish population on the grounds of the Eastern North Atlantic will be repleted, since it is expected the regulations will call for mesh of larger size, which will allow small and immature fish to escape and give them a chance to reproduce.

As regards economic measures, various plans have been suggested or tried with several of the Eastern Atlantic countries. These are intended to promote the more orderly marketing of fish. Some have been aimed at lowering tariff walls and trade barriers; others at reducing the landings of fish to prevent market gluts; and still others at improving quality.

On the Western North Atlantic a somewhat parallel situation has existed, as regards the need for fishing vessels to travel farther and farther from the home port, because of depleted stocks nearer port. During 1937 this led to the construction of larger and more modern vessels of the otter trawl type. In general these vessels are capable of making faster trips to the fishing grounds as some have speeds of 12 knots or more. These vessels also have improved facilities for refrigerating the fresh fish brought to port. In an effort to replete the haddock fisheries of the Western North Atlantic, especially on Georges Bank where depletion of this species has been more evident, operators of United States and Canadian trawl vessels, in the spring of 1937, formed a voluntary compact among themselves by which they agreed to adopt mesh of larger size in the cod end of the otter trawls, in order to allow juvenile fish to escape. Most of the trawlers fishing for haddock and cod are now using the mesh of larger size. At a meeting in Montreal in Sept. 1937, the North



American Council on Fishery Investigations applauded this action and hoped that this voluntary compact on the part of the industry would be made permanent by some form of international agreement between the countries prosecuting the haddock fishery of the Western North Atlantic.

As regards the economic fishery situation in the United States, efforts were directed in 1937 toward stabilizing the frozen fish trade. Early in the year the sale of frozen fish was retarded because of mild weather conditions being conducive to the production and consumption of fresh fish. This resulted in the accumulation of large surplus stocks in cold storage during the months of January and February. This caused apprehension among many members of the fishery industry lest these stocks be carried over to later in the year and result in curtailing the demand for spring- and summer-caught fish for freezing purposes. The situation was brought to the attention of the U.S. Congress which enacted measures early in the year, authorizing the Federal purchase of surplus frozen fish for distribution to relief clients. This had a stabilizing influence in that it opened the channels for the normal sale of fresh-caught fish to freezing concerns. It also resulted in acquainting many people with fishery foods, since considerable of the frozen stocks was distributed to people living in the interior of the United States, where the consumption of fish has not been large. In Newfoundland, the plight of the fishers was given further study in 1937 and measures were promulgated to improve their welfare. This consisted mainly of Government provision for outfitting the fishermen and in taking steps to improve methods for the curing and marketing of fish. In the Maritime Provinces of Canada further progress was made during 1937 in the formation and operation of co-operative associations of fishermen.

**Whaling.**—For the past two decades, various nations of the world, notably Norway and Great Britain have been prosecuting the whale fisheries with renewed vigour. Operations have centred almost entirely in the Antarctic, where previous to this time little whale fishing was done, because of dangerous weather and ice conditions. With improved methods for capturing whales, however, and for their manufacture into oil aboard the large and staunchly built factory ships now used, these conditions have constituted no obstacle. The take in recent years has been enormous; for instance, during the period from the season of 1919-20 to the 1935-36 season, inclusive, 302,734 whales were captured in the Antarctic, from which 23,922,688 barrels of oil have been produced, according to Report VIII (1937) of the Committee for Whaling Statistics, Oslo. One barrel of about 50 gallons equals  $\frac{1}{2}$  ton. One ton equals 1,016kg. or 2,240 pounds. From the same report we find that during the 1935-36 season alone 30,991 whales were captured in the Antarctic fishery, from which 2,436,338bbls. of oil were produced. Norwegian whaling accounted for 14,421 whales, with an oil production of 1,116,033bbls.; British whaling accounted for 12,538 whales with an oil production of 995,167bbls.; and the whaling of other countries in this area accounted for 4,032 whales with an oil production of 325,138 barrels. During this season 7,186 men took part in the Antarctic whale fishery, all of whom except 455 were Norwegians.

Because of the intensive hunt for whales in recent years, many conservationists felt that some regulatory measures were necessary to prevent the complete extermination of this marine mammal. If this did occur, it of course would mean the loss of a valuable economic resource. This apprehension led to concluding an international convention between 26 powers for the regulation of whaling, which became effective in 1935. While the regulations under this convention have afforded whales much-needed protection, experience gained in recent years has indicated

that additional regulatory measures are needed. To accomplish this an international agreement for the further regulation of whaling was signed in London on June 8, 1937, on behalf of the Argentine Republic, Commonwealth of Australia, Germany, the Irish Free State, New Zealand, Norway, the Union of South Africa, the United Kingdom of Great Britain and Northern Ireland, and the United States of America. The agreement will become effective when ratified by a majority of the signatory Governments, among which must be the ratifications of Germany, Norway, and the United Kingdom. Up to Dec. 15, 1937, these three countries and the United States have ratified the agreement.

(R. H. F.)

**Fives:** see HANDBALL.

**Five-Year Plan, Second:** see UNION OF SOVIET SOCIALIST REPUBLICS.

**Flagstad, Kirsten** (1895- ), Norwegian opera and concert singer, was born in Hamar, Norway. At the age of eighteen she sang as Nuri in D'Albert's *Tiefland*. Her debut was so successful that she was sent to Stockholm for study. There followed years in the Oslo and Gothenberg operas; and then, with her marriage, came several years of retirement. In 1933 she sang at the Wagnerian festival in Bayreuth. This led to her engagement in the Metropolitan Opera, New York, and her debut there, Feb. 2, 1935, as Sieglinde in *Die Walküre*. Her success at the Metropolitan, in London, and elsewhere has been remarkable, and she has been hailed as one of the great Wagnerian singers.

**Flandin, Pierre Etienne** (1889- ), French advocate and Republican deputy for the Yonne department; was under-secretary of state for air in 1920, minister of commerce in 1924 and 1929-30, of finance 1931-32, and of public works in 1934, on Nov. 8 of which year he became premier. Refused the special powers he sought to combat the financial crisis in May 1935, he resigned, and served as minister of State in succeeding cabinets until the formation of the Blum Government in 1936, since when he has not held cabinet office.

**Flax:** see LINEN AND FLAX.

**Floods and Flood Control.** The land surface of the earth is in a state of continual change: it is slowly, constantly, being elevated by geological forces and as slowly and inevitably being eroded and leveled by the action of water. Water falls as rain or snow, a large portion of which runs off the land as rivulets and creeks which later unite to form a river. On the higher elevation the river cuts a deep channel which is more than capable of caring for the maximum flow of water, as, for example, the Grand Canyon of the Colorado river. When the river reaches the lowlands it becomes sluggish and meanders over wide areas so that the channel cut by the river is not deep enough to take care of the maximum flow of water. Consequently, when heavy rains or snows occur on the watershed of the river, floods inevitably must occur in the lowlands of the valley.

Floods of this type occur on various portions of the earth's surface wherever similar geographical and climatic conditions prevail, such as on the Mississippi, the Hwang-Ho or Yellow river, the Ganges and the Nile. Such floods are caused by climatic conditions over which man has little or no control. They are largely seasonal and have occurred and are apt to occur at any time on the lowlands of such large rivers whenever the rainy season commences. For example, heavy tropical rains occur on





A CHAIN GANG from the Shelby County, Tennessee, Penal Farm carrying sand bags to reinforce Mississippi river levees during the disastrous flood of 1937

the headwaters of the Nile river in April and May, causing rise in the river often as much as three feet per day. The resulting flood stage invariably reaches a maximum at Assuan early in September.

Since the alluvial valley of the Mississippi has been formed by the flood waters carrying the silt from the higher elevations, floods must have always occurred on the Mississippi. From 1785 to 1930, thirty major floods have been recorded. Whenever the gauge at Cairo, Ill., reaches fifty feet there is danger of a disastrous flood in the lowlands. During the past seventy years the river has risen above this point exactly twelve times, in 1862, 1867, 1882, 1883, 1884, 1886, 1897, 1899, 1907, 1912, 1913 and 1937. Floods also occur due to unusual circumstances such as the breaking of dams constructed for impounding water or to so-called cloudbursts. The Johnstown flood in Pennsylvania in 1889 is of this type.

**Methods of Flood Control.**—A number of theories have been advanced for the control of floods such as the construction of levees, establishment of spillways, construction of reservoirs, reforestation, terracing cultivated soil and the creation of floodways to care for the river at flood time.

Since the water of a river near its edge runs slower than it does in the centre, it naturally deposits its silt and mud to form banks. The banks of the river in a low valley therefore are higher at the river's edge and slope away from it.

The inhabitants of a region adjacent to a river menaced by floods early sought to protect their homes, property and lives by strengthening these banks, making them higher and stronger. The theory being that if these levees were constructed high and strong enough they would confine the river and cause it to construct a channel by scouring which would be deep enough to care for the maximum flow of the river at flood time. For forty centuries the Chinese have been trying to control the Hwang-Ho in this manner. The levees have been built higher and higher throughout the centuries. But the river bed does not scour; it slowly rises a foot a century until today the bottom of the river, confined by levees, is twenty feet above the surrounding country. When the levees break as they do in time of flood, the terror, suffering and desolation on the lower plains are inconceivable. The establishment of reservoirs on the headwater of the various streams which make the main river would be of immeasurable value in flood control but the cost would be very large.

It is true that the accepted method of crop production on the uplands by breaking up the sod and the production of only cultivated crops promotes soil erosion and decreases the water holding power of the soil. The same thing is true when the primeval forest is destroyed and the protecting vegetation thus removed. Soil erosion under these conditions takes place more rapidly. More water escapes to the river and the soil debris is deposited in the river channel in the lowlands, thus increasing the damage from floods. Reforestation and improved soil management are vital problems as methods of flood control, and their wide adoption would have a pronounced influence on the prevailing state of the agricultural and lumbering industries. The correct solution of the problems presented by floods can only be obtained by a full and scientific understanding of all the contributing causes of flood disasters. Floods, however, occurred on the Mississippi river long before white men settled in the Mississippi valley or had removed the protecting tree and sod cover of the timbered watershed or sod bound prairie. When De Soto visited the Mississippi in 1543 long before the watershed had been in any way affected by man, he found it in flood stage. If the account of the historian of this expedition can be relied upon, this flood was probably as severe as any which have since occurred. The statement that "The Mississippi flood is a man made disaster," is therefore inaccurate. It is true that the destruction of the protective forest and native sod by man has in many cases accelerated the rapidity of the flood waters and thereby has increased the damage done by floods. It is also true that modern civilized man has built villages, towns and cities in the lower lying flood plain where damage and destruction of life and property must result whenever flood conditions prevail.

The fourth theory for controlling floods is by the creation of a floodway to accommodate the maximum flood. In a state of nature the river naturally spills over its banks at certain points. The advocates of this theory of control would permit and cause the river to spill over at certain points and flood a confined portion of the surrounding country. In effect, the river would be widened at certain points to care for the flood and a certain portion of the surrounding country deliberately sacrificed to protect the remainder.

There is little new, except as to magnitude, in modern methods of flood control as the methods now advocated were practiced as well by ancient and mediaeval peoples. Levees have been con-



structed on the Yellow river for thousands of years until today the bottom of the river is twenty feet above the level of the surrounding country. Ruins of terraces in South America have recently been discovered which antedate the Inca civilization. Floodways have been used by the Egyptian people on the Nile river for thousands of years. The prevailing notion that "levees only" will solve the problem of flood control is not true. The Chinese built bigger and better levees on the Hwang-Ho for four thousand years without securing such protection. Levees, spillways, floodways and reservoirs must all be used. But reforestation and a decided change in agricultural practice of the farm lands in the valley must take place if for example the Mississippi is not to become "The Sorrow of America." (Ro. St.)

The year 1937 was marked by several severe floods. The Thames caused considerable damage in London and its vicinity in late January; but far more disastrous was the Ohio flood of the same month which reached record heights, destroyed half a billion dollars worth of property and cost over 900 lives. Only mobilization of relief workers and the advanced warning to Mississippi cities prevented damage in lower sections of the system from approaching the havoc in Louisville and Cincinnati. During March towns to the north of London suffered from heavy rains along the Ouse. The following month London, Ont., Pittsburgh and Johnstown, Pa., Wheeling, W.Va., and Cumberland, Md. were severely hit; while such scattered regions as Alaska, Bulgaria, Burma, Chile, Ecuador, Korea and Poland reported disasters in the early summer. As usual few crises arose during the late summer and fall. (See also LIBRARIES: *Flood Damage*; MISSISSIPPI RIVER SYSTEM.)

**Floors:** see INTERIOR DECORATION: *Floors*.

**Florida**, extreme south-eastern State of the United States, is called the "Peninsula State" because of its peculiar outline. Its coast line is greater than that of any other State, extending 472mi. along the Atlantic and 674mi. along the Gulf of Mexico. Its total area is 58,666 sq.mi., of which 3,805 sq.mi. are water surface. Florida contains about 30,000 lakes, many of them connected by subterranean channels. Population (U.S. census, 1930) 1,468,211; (State census, 1935) 1,606,842; (Federal estimate, July 1, 1937) 1,670,000. Of the 1935 population 1,139,063 were white and 463,205 coloured; 989,743 were urban and 613,972 rural. Only about 45,000 were foreign born. The largest cities were Jacksonville, Miami and Tampa, with populations of 146,289, 127,600 and 100,151 respectively, and Tallahassee, the capital, had 11,725.

**History.**—The most significant recent developments in Florida government were the adoption of a constitutional amendment (1935) exempting homesteads up to \$5,000.00 value from *ad valorem* taxes and more recently of an amendment allowing the State to participate in the Federal Government's Social Security program. The congressional re-apportionment, which followed the 1930 decennial census gave Florida a fifth Representative in Congress. The present State elective administrative officers, whose terms expire in Jan. 1941, are Fred P. Cone, governor;



FRED P. CONE, governor of Florida

R. A. Gray, secretary of State; Cary D. Landis, attorney-general; J. M. Lee, comptroller; W. V. Knott, State treasurer; Colin English, superintendent of public instruction; and Nathan Mayo, commissioner of agriculture.

**Education.**—At the head of the State school system is the superintendent of public instruction. The school revenue is derived from a permanent school fund, special State and county taxes, the one-mill *ad valorem* tax and legislative appropriation on the teacher-pulpit-unit basis, which yielded \$11,323,249.52 for the fiscal year, June 1936–June 1937. State appropriations for higher education amounted to \$6,683,916.75. During the last decade the enrolment of the higher institutions of learning rose rapidly. Nearly 3,200 students are now enrolled at the University of Florida and around 1,800 in the Florida State College for Women. The number of children, according to the last report of the State superintendent, in the public schools was 305,355, of which 217,054 were in schools for whites and 88,301 were in coloured schools.

**Charities and Correction.**—Since 1923, when the convict lease system was prohibited by law, the State prisoners are kept at the State prison farm or are worked on the State highways or in a few of the other State-maintained institutions. Florida maintains two reformatories, an Industrial School for Boys at Marianna and an Industrial School for Girls at Ocala. The Florida Farm Colony (for feeble-minded) is located at Gainesville and there is a Hospital for the Insane at Chattahoochee. Among the noteworthy private charities is the Children's Home Society.

**Banking and Finance.**—The last available figures on the State's financial condition, taken from the report of the State treasurer for the fiscal year ending June 30, 1936, show a total balance in the treasury of \$19,023,010.45. The total bank deposits in Florida national and State banks March 1937 were \$295,390,000.

**Agriculture, Manufactures and Minerals.**—Agriculture is the most important industry of the State. In 1935, there were 72,857 farms with a total acreage of 6,048,406, of which 1,142,767 were in crops, 489,006 were idle (fallow), 2,362,674 were in pasture, 1,140,941 were in farm woodland and the rest mainly in fruit. The crops valued at over \$5,000,000 for the 1937–38 season were:

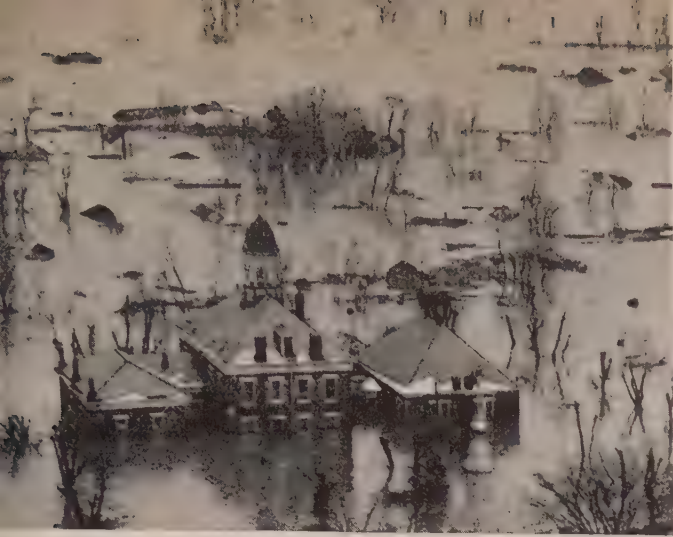
	Acres	Production	Value
Oranges (including Tangerines) . . . . .	..	24,000,000 boxes	\$35,385,000
Grapefruit . . . . .	..	13,000,000 boxes	11,650,000
Tomatoes . . . . .	32,500	2,746,000 bu.	7,587,000
Snap beans . . . . .	58,800	4,688,000 bu.	7,037,000
Corn (Maize) . . . . .	789,000	7,890,000 bu.	5,760,000
Irish potatoes . . . . .	34,000	4,114,000 bu.	5,348,000

The production and marketing of live stock is also important. On Jan. 1, 1937, the live stock resources of the State were: 681,000 cattle, 115,000 milch cows, 499,000 swine, 38,000 sheep, 18,000 horses, and 41,000 mules.

The more important manufactures of the State were lumber, naval stores (turpentine and rosin) and cigars. In the 12 months season April 1936 to March 1937 Florida produced 6,200,000gals. of gum turpentine valued at \$2,380,000 and 355,000bbls. of rosin valued at \$4,070,000. Her 1937 lumber output was 600,701,000 bd.ft., mainly cypress and yellow pine, representing a value of nearly \$19,000,000. The cigars manufactured yearly in Florida represent approximately \$20,000,000. Two comparatively recent industries are the growing of tung nuts and the production from them of tung oil and the making of paper from pine pulp.

The State has only limited resources in minerals, the more important of which are phosphates, lime, limestone, kaolin and fuller's earth. The value of the phosphates produced in 1937 was around \$3,400,000.





AT LAWRENCEBURG, Indiana, only a church, a school and a few business buildings rise above the Ohio river's flood



FLOOD WATERS of the Mississippi pouring into the Birds Point floodway after the levee had been dynamited



WRAPPED IN BLANKETS, an influenza sufferer is rescued through a second-story window in a flooded suburb of Cincinnati, Ohio



EMERGENCY MILK delivery for flood victims at Nashville, Tennessee



THE 'MILLION-DOLLAR FLOOD WALL' of Portsmouth, Ohio, protected the city from the Ohio river in 1936 but was inadequate in the flood of 1937



FLOODED AMUSEMENT PARK at Cincinnati, Ohio. The normal channel of the Ohio river is in the background beyond the fringe of trees



An important asset is the annual tourist trade, amounting to about \$40,000,000 expenditure in the State during the 1936-37 season. (J. M. L.)

**Florida Ship Canal.** This impressive engineering project was included in the recovery program of President Roosevelt. It consists of a maritime waterway from Jacksonville on the Atlantic across Florida to Port Inglis on the Gulf of Mexico. From deep water to deep water, the canal would be 195 miles long, and for about half this distance, the route would follow the St. John's river and other natural waters. The total cost, necessarily speculative, was put at \$147,000,000. Ships using the canal would make the transit in 25 hours and would save  $2\frac{1}{2}$  days of voyage around the peninsula and corresponding costs, estimated according to present trade at \$7,500,000 annually.

The project has been criticized. Seaports south of the canal—for instance, Titusville, Palm Beach, Miami and Tampa—might suffer from the competition of the canal, and on geological grounds, the canal is opposed as “a drainage ditch” which would affect the subterranean waters of an aqueous territory so imperilling the growth of citrous and other vegetable products as well as the water supply of municipalities. An initial allotment of \$5,000,000 was approved by President Roosevelt on Sept. 3, 1935, but in 1936 Congress refused to provide further funds for the enterprise and work was interrupted.

**Flour and Flour Milling.** A demand for richer breads has encouraged a tendency toward slightly creamier flour types. Although colour is still an important quality factor, a dead-white flour is no longer considered a necessity, and the newer flour grades have reflected a disposition on the part of the baker to be better satisfied with a slightly creamy, more natural flour tint.

The tendency toward a slightly higher protein in the flour of recent crops is probably due to favourable growing conditions. Since environment at the critical stages of growth, particularly moisture and fertilization, has a great influence upon wheat composition, the seasonable variations in flour quality may be considerable, especially where wheat blending is not practised. Such variations should not be considered as important trends in the milling industry as a whole.

Enzymatically, there is no great difference in flour quality, although some millers have succeeded in developing the natural diastase of wheat by controlling the “tempering” conditions of wheat so as to maintain an atmosphere favourable to enzymic activity.

**Milling Practice.**—Flour blending has not only been practised by most of the successful bakers, but also by many of the better millers. Since scientifically controlled wheat blending usually precedes the milling of flour, the ultimate baked product in most instances represents a wide variety of wheats from several different growing sections. These repeated blending operations, based upon the results of chemical analyses and scientific baking tests, go far toward insuring uniform quality in the various flour grades.

Adequate elevator capacity, with dependable laboratory facilities, have been vital factors in securing uniformity in the characteristics of any given grade or type of flour. Without ample storage capacity and a means of quickly and accurately determining the quality differences in the incoming cars of wheat during the harvest season, it is impossible to separate the various wheat types in such a manner that the quality of the flour may be controlled within the quality limitations of the desired grade.

While ultraviolet irradiation for the purpose of vitamin production has become established to a certain degree in the field of cereal foods, it has yet to become practical in the milling

industry. In view of the growing interest in vitamins as a nutritional necessity such a development may be looked upon as a future possibility.

Wheat germ oil, until recently a laboratory curiosity, has become recognized as an extremely rich source of vitamins B and E. A few of the larger millers have taken steps to separate the wheat germ from their feed house streams, and have found a profitable market for the processed germ as well as for the oil obtained therefrom. (H. E. BA.)

**Fluorspar.** The chief producers of fluorspar are the United States, Germany, the Soviet Union, and the United Kingdom, which account for about three-quarters of the total output; France was formerly an important producer, but has declined, while the Soviet Union has increased its output. A pre-depression total of about 400,000 metric tons declined to 122,000 tons in 1932, and has since recovered to about its former level. The United States produces about one-third of the world total, and imports enough more to bring the domestic consumption up to about one-half of the world supply. The iron and steel industry takes about 80% of the domestic consumption, while the manufacturers of glass and enamel, and of hydrofluoric acid and its derivatives account for 10% each; other uses are small. (G. A. Ro.)

**Food and Drug Laws:** *see* DRUGS AND DRUG TRAFFIC.

**Food Prices:** *see* PRICES, STATISTICS OF.

**Foot-and-Mouth Disease:** *see* LIVESTOCK; SHEEP.

**Football.** Intercollegiate football is the atlas of college sport in the United States. Upon its broad base is reared the entire athletic structure, and without its large revenues retrenchments would have to be made that would seriously curtail, if not eliminate, activity in most of the other major and the minor branches of competition. Even so richly endowed a university as Harvard finds it necessary to saddle football with the burden of its athletic budget, though it looks forward to the day when it can conduct its sports independent of gate receipts.

Understanding the staggering financial load carried by football, running high up into six figures at many large educational centres, it can be grasped how popular is the game and how essential it is to have a winning team that will attract its share of the millions. During the period of the depression the profits from football fell off to an alarming degree, with the result that drastic revisions had to be made in the outlay of funds for the sports that are not self-supporting. The intercollegiate rowing regatta was called off one year, interrupting the sequence of one of the oldest and most famous of all the college fixtures.

During the past few years football has staged a steady recovery and directors of athletic set-ups, with their large overhead and interest and amortization obligations on stadia, are breathing more easily. This uptrend continued in 1937 and, despite the fact that discouraging weather conditions obtained persistently during the last half of the season, football patronage was back near the peak.

It is estimated that close to 20 million people attended the football games throughout the country. Notre Dame attracted more than 450,000 to its nine contests. Army and Navy played to 102,500 in Philadelphia, with rain falling, and the almost unbelievable total of 400,000 applications for tickets, at \$4.40 each, was received by the service academies. California and Stanford drew 85,000, and crowds of 70,000 were out on repeated occasions. As further indications of the recovery, the Yale Bowl was filled to its capacity of 72,000 for the first time since 1929 for the Dartmouth game and Harvard's Soldiers' Field drew its limit of





A LINE PLUNGE in the new football game played by six-man teams and said to be the fastest-growing scholastic sport in the U. S.

nearly 58,000 for the first time since 1931 for the meeting with Yale. A high school game in Chicago lured between 115,000 and 120,000 people, an unheard-of turnout for competition of the secondary class that is to be explained by the nation-wide fame accruing to a schoolboy player William De Correvont.

The teams that drew the biggest crowds were not necessarily the strongest. Neither Army nor Navy ranked with the leaders, and Notre Dame was beaten twice. However, the elevens that had the best records on the field did not lack for patronage.

The foremost teams of the season, as ranked in a nation-wide poll of sports writers, were Pittsburgh, California, Fordham and Alabama, in that order. California was hailed as a "Wonder Team" and gave demonstrations of tremendous running power against its strong rivals with the exception of Washington, which held it to a scoreless tie. But, despite the awe in which the Golden Bears were held, Pittsburgh was the definite choice as the No. 1 team of the year. The Panthers had one of the most difficult schedules of the season and defeated all opponents with the exception of Fordham. Fordham, rated by many as the strongest defensive eleven in the country, held Pittsburgh to a scoreless draw for the third successive year and came out on top in all its other contests.



A CENTRE, two ends and three backs line up in the new football of six-man teams, now played in 700 schools in the United States

Alabama was the only one of the four to win all of its games and was invited by California to be its opponent in the Rose Bowl fixture at Pasadena on New Year's Day. The invitation went forward to Alabama after the Pittsburgh players had voted themselves out of the running with Fordham hopeful of getting the call. The California team won by a score of thirteen to nothing.

The Sugar Bowl game in New Orleans presented Louisiana State and Santa Clara and resulted in a victory for Santa Clara of six to nothing. Santa Clara was one of the few major teams to win all of their games. The only others were Alabama, Colorado, and Lafayette. Lafayette, under its new head coach, E. E. (Hooks) Mylin, was the surprise team of the East after losing seven games in 1936. The East had an unusually large quota of unbeaten major teams. In addition to Pittsburgh, Fordham, and Lafayette, Dartmouth, Villanova, and Holy Cross also escaped defeat, though all were tied.

Sectional honours went as follows: Pittsburgh was rated the No. 1 team of the East (as well as of the country), with Fordham ranked a close second and Dartmouth and Villanova next in order. Yale, Harvard, and Cornell had strong teams although beaten. The Big Ten championship was won by the formerly invincible Minnesota team, whose defeat by Nebraska, the Big Six champions, was one of the real surprises of the season and which lost also to Notre Dame. California won the Pacific Coast Conference honours. Alabama led the South-east Conference, with Louisiana State losing out through its 7-6 defeat by Vanderbilt. Rice, after a discouraging start, won the South-eastern Conference title. North Carolina ousted Duke as the leader of the Southern Conference, and Colorado won the Rocky Mountain championship. Byron (Whizzer) White of Colorado was one of the most famous players of the year, but the highest individual honours went to Yale's Captain Clinton Frank of Evanston, Ill. Frank was awarded the John W. Heisman Memorial Trophy as the outstanding player of 1937.

The style of play in 1937 was featured by one marked trend. The use of the five-man line, confined largely to the South-west heretofore, was extensively adopted in the East, with Yale starting the vogue. As a consequence, the outcry was heard that the defence, with its changing set-up from a six to a seven or five-man line, had too big an advantage over the attack, throwing its blocking assignments into confusion. The Harvard style of attack, with its adaptation of the deception and faking of the double wing to the single wing, was acclaimed as the best of the year and as the model to set the fashion in the East in 1938.

Professional football enjoyed its best season in the 16 years' history of the National Football League. Part of the credit for the boom was given to "Slingin' Sammy" Baugh, who led the Washington Redskins, transferred from Boston, to the National championship. Baugh's passing against the New York Giants in the Eastern final and against the Chicago Bears in the play-off for the National title won him wide recognition as the best passer football has seen.

Many followers of football would like to see the colleges follow the example of the professionals in putting the goal posts on the goal lines and permitting forward passing from any point behind the line of scrimmage.

**Canada.**—In Canada, where many of the features of the United States game have been adopted, with great stress given to the forward pass in recent years, football also enjoyed a lively season. Canadians' thoughts naturally turn to ice hockey in the fall and nothing can displace this game in their favour, but football is taking hold more and more.

Kicking, which plays second fiddle to running and passing in the American college game, is of paramount importance in the Dominion brand of football, both as an offensive and defensive



weapon. The success of the Toronto Argonauts bears this out. With three outstanding punters in Isbister, Selkirk, and West, the Argonauts, whose running attack was largely centred in an end sweep featuring long laterals, defeated rivals that had greater running and passing strength to win the Canadian championship. They won the Big Four title by defeating the Ottawa Rough Riders and in the Eastern final eliminated the Sarnia Imperials. Then came the Dominion final with the Western champions, the Winnipeg Blue Bombers. Toronto won on Selkirk's field goal to become the National champions. (A. D.A.)

**Great Britain.**—*The Rugby Union Game.* The season that ended in April of 1937 saw England win the international championship, beating all the other three countries. But never has the championship been won by such a narrow margin, or, as some would say, by a luckier side! Wales was beaten at Twickenham by a dropped goal to a try (4 points to 3), Ireland was beaten at Twickenham by a penalty goal and two tries to a goal and a try (9 points to 8), and Scotland was beaten in Edinburgh by two tries to a penalty goal (6 points to 3). Thus in three games England scored in all only 5 points more than their opponents. The English side reserved their best display for the Calcutta Cup match—that against Scotland, in which England not only won the Cup and the championship (for this is the last of the internationals), but won for the first time on the Murrayfield ground. This ground was opened in 1925, and England had never won there before, though they had tried to do so six previous occasions. England was the last of the home countries to win there. H. G. Owen Smith, equally well-known as a South African and Oxford cricketer, captained the England side, and played brilliantly at fullback. There have been few finer athletes in recent years than Owen Smith, who was a first-class Rugby footballer and cricketer, a splendid boxer, and kept goal for his hospital (St. Mary's), in the Hospitals Association final.

Ireland came next in the table (they probably had the best side of the lot!), with Scotland next, and Wales last. Wales lost all her matches, though it should be borne in mind that the two best players in the Rugby world, Cliff Jones and Wilfred Wooller, were not much use to Wales, Jones being unfit to play at all, and Wooller never being really fit. The international football was not of a very high standard, though there was one superb match—the one between England and Ireland at Twickenham, where G. J. Morgan, the Irish captain, and F. G. Moran, the right wing, played very well indeed.

Gloucestershire won the county championship, beating the East Midlands in the final. This was their ninth win, and they are now level with Yorkshire in the number of wins. But Gloucestershire was lucky to get past the semi-final. There they beat Kent at Gloucester by a dropped goal to a try (4 points to 3).

A very strong Army side won the inter-Services tournament, beating the Royal Navy and the Royal Air Force fairly easily. There were seven Internationals in the side, among them E. J. Unwin and R. Leyland in the three-quarter line, and G. J. Dean and F. J. Reynolds as halfback. The Hospitals Cup was won by St. Mary's, with a very fine side that included Owen Smith. They beat Guy's in the final by 11 points to 8.

The season that started in the autumn of 1937 was memorable in its first half for two things in particular—the retirement from the chairmanship of the English selection committee of John Daniell, and the magnificent victory of Oxford over Cambridge. John Daniell had been a selector for over 20 years, and everyone hopes that, after a little rest, he will resume the splendid work he was doing for the game. When John Brett (Durham and St. Edmund Hall) led his Oxford side on the field on Dec. 7 against the potentially brilliant Cambridge side, led by J. D. Law (Dover and Jesus), only the most ardent Oxonian thought that Oxford

had the remotest chance of winning. But some splendid tackling by H. D. Freakes, who came up from fullback to centre three-quarter for the occasion, and M. M. Walford, and splendid leadership of his forwards by Brett, with P. K. Mayhew helping him well, put the Cambridge backs completely off their game, and Oxford won easily by a goal and four tries to a dropped goal (17 points to 4). His Majesty the King was present at the match.

**Rugby League Football.**—This professional form of Rugby football is now practically confined to Yorkshire and Lancashire. Actually amateurs are allowed to take part but, as in professional Association, by far the bulk of the players are professionals. The attempt to establish the game in London failed, and at the beginning of the 1937–38 season, the remaining London club was disbanded. The rules are slightly different from those prevailing in Rugby Union football, and there are only 13 players on each side. In the all-Yorkshire semi-final of the Challenge Cup, between Wakefield Trinity and Keighley at Headingley, at the end of last season, there were 40,000 present, a record for any Rugby League match in Yorkshire. This particular game ended in a draw, with no score, and in the replay Keighley won by 5 points to nil. They went on to play Widnes in the final at Wembley, but they were well beaten there by 18 points to 5. In the League table, Salford was top, Warrington, Leeds, and Liverpool Stanley coming next in that order. These four then had a knock-out competition for the championship, which Salford won, beating Warrington in the final by 13 points to 11.

In the first half of the 1937–38 season, Warrington did well again, but Yorkshire clubs were bunched at the top in greater numbers than usual. An Australian Rugby League side toured the country during that time, but did not do very well.

**Association Football.**—There were some interesting individual records achieved in the season 1936–37. W. R. Dean, the Everton and England centre forward, broke a record that had long been held by Steve Bloomer, that of scoring the greatest number of goals in League football. Bloomer's total stood at 352; but 36 more by Dean during the past season brought his total to 375, and he looks fit for many goals yet. Still, he has some distance to go to equal the record of James McGrory (Celtic), who is still playing well, and whose total at the same date was 405. The game lost some great men in 1937. That superb outside forward, subsequently a director of his club, W. I. Bassett of West Bromwich Albion, died on the eve of his club's visit to London to play Preston North End in the semi-final of the F. A. Cup. Perhaps it was not surprising that the Albion lost badly. "Billy" Bassett was a great little man, on the field and off. Sir Charles Clegg, Mr. Arthur Kingscott, and other famous administrators died the same year. Sir Charles played in the first international match between England and Scotland (in 1872), and was connected with the Football Association from 1886 till his death, having been chairman from 1890 till 1923, and from then on president. He was knighted for his services to football in 1927. Mr. Kingscott was a former honorary treasurer of the F. A.

Playing splendid football with a well-balanced side, Manchester City headed the League table, Charlton Athletic coming next, and Arsenal third. Strangely enough, the other Manchester club, Manchester United, was practically bottom of the table, Sheffield Wednesday being the only club below them. Manchester City's goal record was easily the best in the table. They scored 107 goals, whereas the runners-up scored only 58 in the 42 matches. It is doubtful whether there has ever been such a disparity between the first and second clubs before. No one likes to see Aston Villa in the second division—it seems all wrong, even though other famous clubs like Blackburn Rovers and Sheffield United are there as well. It was hoped that they would get back straight away to the first division; but they had to be content with ninth position,



Sheffield United being seventh, and Blackburn Rovers twelfth. Leicester City were top, and they, with Blackpool, were promoted at the end of the season. The F. A. Cup final, played as usual at the Imperial stadium, Wembley, was won by Sunderland, who beat Preston North End rather more easily than a score of 3-1 would suggest. It seems almost incredible, for they have had a fine side for very many years now, but it was the first time that Sunderland had ever won the Cup. Even so, they all but had their usual luck in Cup matches, for it took them three games to dispose of Wolverhampton Wanderers in the sixth round. The Cup-winners in other countries were: Celtic (Scotland), Belfast Celtic (Irish F.A.), and Crewe Alexandra (Wales). There were record crowds at both Glasgow and Wembley, and the comparative figures are rather interesting. There were 146,000 people at Glasgow and they paid £12,248, and 93,000 at Wembley, who paid £24,831.

There is nothing like so much interest taken in Association football matches, except perhaps, in the England v. Scotland match, which was played at Glasgow last season before a record crowd of 149,547 spectators. Scotland won by 3 goals to 1. But Wales won the championship, beating all the other three countries. Scotland came next, then England, and finally Ireland, with three defeats. In the amateur internationals, Scotland won all her matches, England winning one only, that against Wales at Portsmouth, about which there was no mistake, for Wales was beaten by 9 goals to 1. During the summer, or rather in May, an English side toured Norway, Sweden, and Finland, and beat all these countries easily. Scotland found their task a much harder one in Austria and Czechoslovakia. Still, they managed to avoid defeat, drawing the game in Vienna and winning in Prague.

The season that started in the autumn of 1937 went off smoothly, with preparations being made for much rejoicing at the end of it, for 1937-38 is the jubilee season, the Football League having been formed in 1888 with 12 clubs. It is interesting to note that not one of these clubs has remained continuously in the first division. All have been relegated for long or short periods at some time or other. Perhaps the most interesting general feature of the league tables before Christmas was the fight Aston Villa were making in division II. At the turn of the year they displaced Coventry City at the top. The University match was won by Cambridge, again unexpected, though not anything like so unexpected as their defeat in the Rugby match. (D. R. G.)

**Foot, Arthur William** (1853-1937), American organist and composer. Born in Salem, Mass., March 5, 1853, he graduated from Harvard university in 1874 and studied at the New England Conservatory of Music. From 1878-1910, he was organist of the First Unitarian Church of Boston. He was one of the founders of the American Guild of Organists and was elected a member of the National Institute of Arts and Letters in 1899. Among his compositions were the symphonic prologue *Francesca da Rimini*, the overture *In the Mountains*, and the suite *Four Character Pieces after Omar Khayyam*. His most famous song was *The Night Has a Thousand Eyes*. He set music to Longfellow's poems, "The Wreck of the *Esperus*," "The Farewell of Hiawatha," and "The Skeleton in Armour." He died in Boston, April 9, 1937.

**Foot Racing:** see TRACK AND FIELD SPORTS.

**Forbes-Robertson, Sir Johnston** (1853-1937), English actor; born in London, Jan. 16, 1853; died at Dover, Nov. 6, 1937. For details of his stage career see *Encyclopædia Britannica*, vol. 9, p. 490. Sir Johnston's final retirement from his profession in 1915 had the distinction of being really final, for any subsequent appear-

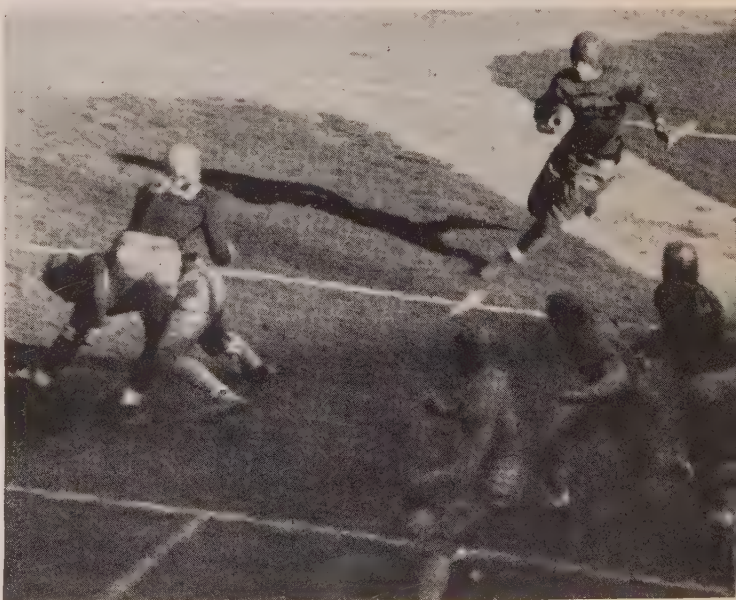


THE TELESCOPIC LENS catches a spectacular detail of football as a Pennsylvania player upsets a member of the Columbia team

ance of his was purely voluntary and given for purposes of charity. The chief of these voluntary appearances was in *The Passing of the Third Floor Back*, which ran for some months in 1917 for the benefit of War charities. The very high esteem in which Sir Johnston was held by the theatre-going public was due, perhaps more than to any other quality, to his remarkable physical advantages, including the great beauty of his voice. It was inevitable that he should have been a member of the British Broadcasting Corporation's advisory committee on spoken English.

**Foreign Exchange:** see EXCHANGE RATES.

**Foreign Missions.** For the foreign missions of the Protestant Churches of the United States the year 1937 has been chiefly characterized by two tendencies and one major crisis. The first tendency has been toward a recovery in income. The decline in giving which began about



TWO RANKING U. S. football teams, Pittsburgh and Fordham, might not have played a scoreless, tie game, but for illegal blocking (left) that nullified a touchdown by Goldberg (upper right) of Pittsburgh



1925 as a reaction against the forced expansion of the first years after the World War and which was accentuated by the financial depression commencing in 1929 has halted. While, with declining interest rates, income from endowments has not come back to earlier levels, gifts from living donors have substantially increased. As a result, the reduction in missionary staffs has been slowed down and here and there a few re-enforcements have been sent out. A second tendency has been toward an adjustment of the policies of mission boards to the new conditions in the midst of which foreign missions are compelled to operate. The adjustment is by no means completed, but it is being made. It has been furthered by the preparation for the meeting of the International Missionary Council at Madras, India, to be held in December 1938. The major crisis has been brought by the hostilities between Japan and China. The attendant intensification of Japanese nationalism has made the work of the foreign missionary more difficult in Japan and Korea. In China the fighting has interrupted many of the normal activities of missionaries and churches. The Japanese victory is being followed by conditions very different from those under which Christian missions in China Proper have heretofore operated. Since the Far East is a region in which Americans predominate in Protestant missions, the crisis is bringing problems which are engaging much attention from American missionaries and mission boards.

Roman Catholic mission agencies in the United States have continued to send substantial numbers of recruits to their growing enterprises in the Far East. American Roman Catholic missions, even more than American Protestant missions, are concentrated in the Far East. The Chinese-Japanese crisis has, therefore, been disturbing.

(K. S. L.)

**Great Britain.**—In 1937, a centenary, a diamond jubilee, two golden jubilees, and a silver jubilee commemorated the birth of the Church of England in, respectively, Bombay, Uganda, Jerusalem, Japan, and China; in each case the church was revealed as no longer foreign to the countries of its adoption, for Chinese and Japanese bishops took part in the Far East celebrations, and at the Uganda Thanksgiving Service 60 African clergy were present; but, in spite of these encouraging signs of progress, the archbishop of Canterbury had to deplore in the autumn a shrinkage of the area of, and a serious shortage of recruits for, the mission field, as well as a diminution of the available funds.

Current contributions in the year 1936-37 (excluding legacies and income from endowments) from the churches of the Anglican Communion in the British Isles for the work of the church overseas amounted to £1,020,757. The average contributions for the years from 1931 to 1936 amounted to £1,022,376; the Church Missionary Society's receipts were £330,890, and those of the S.P.G. £197,630.

The overseas missions of the Methodist Church record another year of spiritual progress, and the Conference (at Bradford) rejoiced that the debt of £13,012 at the end of 1935 was completely cleared in 1936, due to some extent to retrenchment in the mission fields. The income of the Methodist Missionary Society from home sources was £331,380, as against £327,500 for the previous year.

From the British Isles the London Missionary Society received in 1936-37 £129,435 as against £133,100 in 1935-36. The total income from all sources was £344,116 as against £351,805, the excess of expenditure over income being £16,797. The Autumn Assembly of the Congregational Union held at Bristol in October devoted much time to the consideration of the L.M.S. crisis, viewing with deep concern the financial situation of its foreign missions and inaugurating a campaign of faith and renewed effort.

The Baptist Missionary Society had a total expenditure for 1936-37 (including all home expenditure) of £213,229, there being

a deficiency on the year's working of £4,070. The reports of most missionary societies showed reduced incomes and an inadequate supply of workers, but there was every evidence of successful campaigns, even in the troublous field of the Far East.

**Foreign Trade:** see BALANCE OF TRADE; INTERNATIONAL TRADE; SHIPPING, MERCHANT MARINE; TRADE AGREEMENTS.

**Forestry and Reforestation.** One-third of the continental land area of the United States is most valuable for forest purposes, and forests are still a major natural resource. Some 6,000,000 people get their daily bread from industries dependent on forest resources. Forest lands also provide worth-while work, non-competitive with industry, for millions who might otherwise be unemployed. Farm woodlots make up more than 17% of all farm lands. They furnish material and part-time incomes to 2,500,000 farmers. Forest lands help protect watersheds. They help prevent soil erosion and silting of reservoirs and ditches. They also help store water used for domestic and power purposes as well as for irrigation.

Forests help labour, agriculture and industry generally. Half the population of Flagstaff, Ariz., depends on forest products cropped from the Coconino National forest. Ponderosa pine harvested on Mount Harney, in South Dakota, contributes 20,000 man-days of work each year to a nearby but scattered population. In certain Montana counties a \$55,000,000 investment and the livelihood of more than 5,000 people depend largely on planned use of National forest forage. From protected National forest slopes comes water for Los Angeles, Calif.; Portland, Ore.; Salt Lake city and Logan, Utah; Prescott, Ariz.; Denver, Colo. More than 30,000,000 people find health and happiness on National forest vacations each year. The money they spend helps support thousands of local communities. These are a few examples of localities and regions where jobs are steadier and industry and agriculture more secure because forests are treated as crops and forest-land resources renewed and maintained through use. On publicly owned National forests, forest resources are instruments for human welfare.

But of all U.S. commercial forest lands—those capable of growing marketable timber—only the poorest  $\frac{1}{3}$  is now publicly owned. The best  $\frac{2}{3}$  is in private ownership. On this land, with but minor exceptions, forest exploitation continues. And exploited forests are measured by more than billions of feet of timber gone, millions of devastated acres tax-delinquent, potential business lost. These are bad enough, but human exploitation—which follows forest exploitation—is worse.

Rural distressed regions are in general those in which forest exploitation has already taken its toll. They include 1,300 counties, half of all U.S. farms, nearly  $\frac{3}{4}$  of all farm tenants. The average farm holding is 87 acres. This compares with 222ac. in all other counties. Average value of land and buildings is \$1,995 per farm. This compares with \$7,659 in all other counties. The index of farm income is under 30. This compares with 90 to 120 in typical corn belt counties. And in these distressed regions large families are the rule, educational facilities are meagre, living standards are low, undernourishment is common. Sixty odd per cent of the land in these distressed regions is forest rather than cultivable land. Most of it has been exploited, but it is still capable of being rebuilt. This is significant, for although conditions and opportunities for early returns vary from locality to locality, most of these forest lands can ultimately be managed so they will produce continuous forest crops and more nearly normal standards of living. This can be accomplished through worth-while, publicly financed work. And this can, in the meantime, replace a publicly financed dole.



Many people still think of forest conservation as preservation, and advocate using substitutes for lumber. Yet lumber is but one product of wood, which is an abundant source of cellulose, turpentine, lignin, drugs, and chemicals. It makes rayon, paper, films, explosives, plastics, alcohols and acids, lacquers, food for cattle, gas for automobiles. It can make adhesives, artificial wool, human food in certain forms. What it may make depends largely on research and man's ingenuity. Synthetic rubber, from by-products of wood, is chemically possible. Add to all these things the influence forests have on agriculture and commerce, and the need to protect and conserve the cultural and inspirational values forests have, and it becomes evident that a nation cannot afford an economy of scarcity with respect to forests.

Many people also think of forest conservation as supplying huge jobs for preventing and suppressing forest fires, and for reforesting millions of acres with billions of little trees. Both these jobs are important. Since 1935 more than 44,000,000 trees have been planted on the Prairie States Planting Project. In 1936 more than 35,000,000 trees were produced and distributed by States in co-operation with the Federal Government. Approved annual output for National forest nurseries for 1936 exceeded 255,000,000 trees, and the area reforested was greater than in any previous year. But National forests alone now include some 4,000,000ac. that need reforesting, and the area in private ownership is much greater.

In 1910 nearly 5,000,000 National forest acres were burned over. Damage to tangible values was in excess of \$24,000,000. Forest fire control as a science began then, and since then real progress has been made. In the half decade 1910-14, the average number of National forest acres burned per 1,000ac. protected was 7.2. Average reduction since then has been 27% for each half decade. For the seasons of 1935-36 it was only 1.6. But there were more than 16,800 fires on the National forests in 1936, and man caused almost 70% of them. With State and Federal co-operation more private forest lands now receive better protection, but it was not so long ago that fires on those lands burned each year an empire greater than all of Maryland, Connecticut, Massachusetts, Rhode Island, New Jersey, and New Hampshire combined.

Forest conservation includes reforestation, fire protection, and forest preservation, but it is far broader. It has to do with trees, yet as a public policy it considers that the true function of trees is to add continuously to the security and welfare of the people of a nation. To accomplish this, Congress established a National Forest system in 1891. The wisdom of and necessity for public ownership and management of forest lands on an even larger scale has since been demonstrated. Public responsibilities with respect to privately owned forest lands, and Federal and State co-operation with private owners, are also established. With safeguards to insure adequate participation by private owners, public aid in such things as protection from fire, insects and diseases, and in forest research, should be continued and increased.

But 70% of U.S. forest land is privately owned. Here forest exploitation is still practiced generally. Human exploitation is still its aftermath. And—with individual exceptions that are pitifully few—nowhere has private initiative established that cropping practice which, basic to forest conservation, brings security to labour and agriculture and industry. Ex-

perience shows that public regulation of private forest lands is necessary. Such regulation protects vital public interests. It also protects private owners who recognize social obligations inherent in forest-land management from those who might otherwise continue ruthless exploitation. With extension of public ownership of forest lands, with more and better public co-operation with private owners, and with public regulation of forest lands in private ownership, forest conservation will in practice as well as in theory mean human conservation. (F. A. S.)

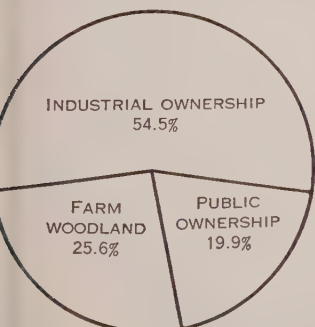
**Great Britain and Europe.**—Recent silvicultural developments have taken place in two main directions: (1) afforestation, to increase the area under forest, (2) measures for increasing the productivity of existing forests. The Italian Government has been afforesting over 20,000ac. a year, chiefly on denuded mountain



STARTING A BACKFIRE to stop an approaching forest fire by burning all inflammable material in its path

slopes. Great Britain, under a State afforestation scheme, has planted an area of over 111,000ac. between 1920 and 1936; the normal program of 20,000ac. has recently been increased to 30,000ac. a year. The Irish Free State has afforested 57,000ac. since 1931. The French Senate has approved an extensive scheme of afforestation of idle lands, with the aid of Government loans. In Czechoslovakia, Hungary, and other European countries, considerable areas of bare land have been planted up during recent years. Among non-European countries, New Zealand, South Africa, and Australia have carried out large planting programs through State and private agency. In New Zealand alone, about 720,000ac. of exotic plantations have been formed up to date; of these, 406,000ac. are State and 314,000ac. private. Japan can show a larger area of artificial forests than any other country in the world. During the last 45 years the area afforested by State, private, and other agencies amounts to nearly 8,000,000 acres.

Steps are being taken to increase the productivity and out-turn of existing forests, and to develop further forest areas. Germany, in her efforts to become self-supporting, has increased the annual cut of all forests over 125ac. by 50%, and is exercising a stricter control over private forests than formerly. Russia is opening up new areas to regular working, especially in Siberia; an increased timber output of 30% was planned for 1937. In the tropics, considerable advance is noticeable in methods of natural and artificial regeneration designed to improve the productivity of the forests. The system of *taungya* plantations, formed with the aid of shifting



OWNERSHIP of the 494,898,000 acres of commercial forest area of the United States





A TYPICAL LOOKOUT STATION, from which forest rangers keep constant watch for fires over hundreds of miles of forests

cultivation, and originally developed in Burma, has been extended to many parts of the tropics.

In Europe, the artificial creation of extensive stands of conifers outside their natural habitat has in some places resulted in serious insect and fungus attacks. This has led to a movement aiming at more natural methods of silviculture, which started in the latter part of the last century, but is largely a post-war development. The main object is to keep forests in a healthy condition and so increase the out-turn of timber of good quality. Clear-cutting and replanting are being abandoned in favour of "continuous forest" shelter-wood systems with natural regeneration, and mixtures are being increasingly employed in preference to pure stands. In Germany this idea has had its latest exposition by Heske and Rubner under the title *Vorratswirtschaft* (growing stock management), under which the aim is not to secure the maximum immediate profit in the working of a forest, but to concentrate attention on maintaining the optimum soil conditions and growing stock in order to bring the highest ultimate return.

Recovery from the recent world economic depression has been reflected in the increased utilization of wood, partly stimulated by the shortage of steel. The use of "composite wood," in the form of plywood, laminated boards, block boards, and fibrous boards, is on the increase. In heavy constructional work—bridges, roof trusses, etc.—the use of composite wood has been greatly extended by improvements in methods of manufacture, in glues, and in joints and fastenings, while plywood faced with metal is now commonly used in aircraft construction and domestic fittings. The pulpwood industry has likewise shown great development. In European countries material formerly used as pitwood is being increasingly used as pulpwood. Russia is starting to build large pulp mills in order to export pulp instead of pulpwood. In Australia, research into the paper-making properties of hardwoods is in progress, while in Burma a scheme is on foot for the manufacture of paper-pulp from bamboos. Attention is being devoted, in France and Germany, to the use of wood and charcoal as fuel for motive power, and during the past ten years there has been a notable increase in the efficiency of producer-gas engines, not only for stationary power-plant, but also for road vehicles. (See also AGRICULTURE: *Land Planning*.)

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**Formosa** (TAIWAN), a large island in the Western Pacific, between the East and South China seas, bisected by the Tropic of Cancer; area 13,429 sq.mi.; capital, Taihoku; population (1935) 5,315,642, mainly Chinese. Formosa has been part of the Japanese Empire since 1895, when it was conquered from China. Part of the island was under Dutch rule from 1624 until 1662; and remains of forts and other Dutch buildings are still to be found in the southern part of the island, in the vicinity of Tainan. Formosa is governed by a governor-general, assisted by an advisory Council, the majority of the members of which are Japanese. The present governor-general is Admiral Seizo Kobayashi. An important Japanese naval base, access to which is closely restricted, is at Mako, in the Pescadores, islands off the western coast of Formosa. The importance of the island as an aeroplane and naval base has been demonstrated during the hostilities with China. Formosa is, in proportion to its size, perhaps the richest of Japan's colonies. It has been intensively exploited, Japanese investment in the island being estimated at 400,000,000 yen (\$200,000,000 at pre-devaluation rates of exchange). Most of this capital has been invested in the sugar industry. Many of Japan's needs—sugar, bananas, pineapples, citrus fruits—are largely or entirely supplied from Formosa, which is also a large producer of rice and the world's largest source of natural camphor. In 1936 Japan received over 90% of Formosa's exports and supplied over 80% of its imports.

(W. H. CH.)

**Fort Peck Dam and Reservoir:** see AQUEDUCTS; DAMS; MISSISSIPPI RIVER SYSTEM.

**France,** a republic situated in the west of Europe; a member of the League of Nations; bordered N. by Belgium and Luxemburg, N.E. by Germany, E. by Germany and Switzerland, S.E. by Italy, S. by Spain, with the Mediterranean sea on its south-east coast, the Atlantic ocean on the west, and the



A LOOKOUT of the U. S. Forest Service telephones warning of a new forest fire to his distant headquarters



English channel and the North sea to the north. Capital: Paris. President: M. Lebrun. National flag: blue, white, and red in equal vertical stripes.

**Area and Population.**—Area: 212,736 sq.mi. On March 9, 1931, the population of France was 41,928,851. On March 8, 1936, it was 42,013,506, an increase of 84,655 in five years. The population is 48.3% male, and 48.8% rural. In 1921, the rural population was 53.6%. The exodus from the country into the towns thus continues gradually. In France, Church and State are separated. The vast majority of the French population is Catholic. There are also about 1,000,000 Protestants and Jews. The language spoken by almost all French people is French. Here and there, however, dialects, such as Flemish, Alsatian, Provençal, Basque, Catalan, Breton, and Corsican are still in use. In certain villages of Lorraine, German is spoken.

There are 17 towns in France with populations of over 100,000 inhabitants: Paris, 2,829,746 (great Paris 4,962,967); Marseilles, 801,000; Lyons, 580,000; Bordeaux, 263,000; Nice, 220,000; Lille, 202,000; Toulouse, 195,000; St. Etienne, 191,000; Nantes, 187,000; Strasbourg, 181,000; Le Havre, 165,000; Toulon, 133,000; Rouen, 123,000; Nancy, 121,000; Roubaix, 117,000; Reims, 113,000; Clermont-Ferrand, 103,000.

**History.**—M. Léon Blum's ministry, the outcome of the elections of April 26 and May 3, 1936, which were characterized by the success of the Front Populaire, was a constitutional government upheld by a parliamentary majority; but it was also the instrument of a revolution, set in motion by its coming, which it made vain attempts to canalize. Its measures of social reform were too hurriedly carried out; and internal dissensions and pressure from outside sources, such as the Confédération Générale du Travail (C.G.T.) would probably have led to its fall in the autumn of 1936 if the parties of the Right had not violently attacked the minister of the Interior, M. Roger Salengro, who committed suicide. This dramatic episode reinforced ministerial cohesion.

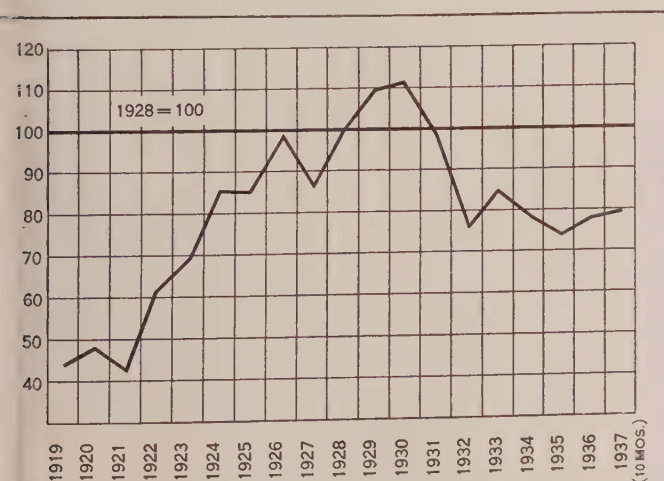
Such was the state of affairs at the beginning of 1937. The financial situation became more and more critical. The "alignment" of the franc with the pound and the dollar did not prevent the franc from losing its value, and the measures taken by the Government remained ineffectual because disorder continued. The promise to suppress sit-down strikes could not be kept. M. Baréty, a member and former president of the Finance Commission of the chamber, evaluated at 36 milliards the total sums to be borrowed during 1937. The amount spent on armaments was not the only reason for this increased expenditure. The 1937

budget created more than 10,000 new posts. The number of men employed on the railways increased by 80,000, of whom 75,000 were peasants taken away from the land. Devaluation might have had some good results if it had been accompanied, as in Belgium and England, by an energetic policy of price restriction. It was accompanied by nothing of the kind. The violent rise in prices involved the Government in a vicious circle of prices and money. It was only possible to raise a loan in England on the security of the gold holdings in the Bank of France. An interpellation of M. P. E. Flandin on Feb. 26 only succeeded in detaching 16 Radical-Socialist votes from the majority. "The devaluation was the result of an initial failure," said M. Potut, a Radical deputy. "The second failure is marked by the rise in prices. The theory of purchasing power is destroyed. If the Government wanted to realize its promises, it would have to face a deficit of 55 milliards this year." "The combination of circumstances is fatal," said M. Flandin. "It is leading to the death of democracy and to dictatorship by the destruction of the middle classes. Anti-capitalism is the ruin of France, for capitalism includes the vast mass of people with small savings."

The Government, while declaring that it refused to modify its policy, nevertheless made a rapid *volte-face*. It declared that a "pause" was necessary, and the cabinet on March 5 decided on a certain number of urgent measures: adherence to the monetary agreement with England and the United States; abandonment of projects of exchange control demanded by the Socialists and Communists; the launching of a big loan for national defence; the setting up of a special commission to administer the Exchange Equalization Fund; and the restoration of free import and internal movement of gold.

On March 5 the ministry found itself at the parting of the ways, with, on the one hand, a steep slope going down to the abyss, and, on the other hand, a difficult path climbing up the hill. They chose the latter; it was a decisive moment in the history of the Front Populaire. At one blow the policy of the last eight months was reversed. It became M. Blum's object to inspire confidence in order to realize equilibrium, thus effecting a return to tradition and to financial common sense. The bill authorizing the issue of the National Defence Loan was passed by the chamber on March 9 by 470 votes to 46, and by the senate on March 10. The loan was a 4½% loan issued at 98, and it was safeguarded against fluctuations of exchange, as it was payable in francs, sterling, or dollars at the holder's option. It was easily covered (two milliards were subscribed) but less easily taken up.

Subsequently, extremist groups of the C.G.T. tried to force the Government to return to a revolutionary policy. The Clichy riots, provoked by the Communists, appear to have been a manoeuvre with the intention either of regaining control of a Government which was threatening to free itself, or else of breaking it. On March 16, the Parti Social Français, whose leader is Colonel de la Rocque, held a social evening for the members of the party and their families. A rumour, which proved to be false, had gone round that Colonel de la Rocque himself would be present. A gang of Communists, composed chiefly of foreigners and Negroes, attacked the hall where the meeting was being held. Five people were killed and 200 wounded. The aim of the extremists had been, on the morrow of the success of the loan and of M. Blum's liberal declarations to bring the Government face to face with insurgent popular forces and to compel it to take their side. But power remained on the side of the law, and the Government could make no further concessions to a revolutionary rising without irrevocably alienating the Radical party. M. Daladier, in a speech on March 21, said, "France is resolutely opposed to dictatorship, whether of a man, a party, or a class."



FRANCE: Industrial production index (The Annalist)



Henceforth, the days of the Front Populaire ministry under Socialist leadership were numbered, for the new policy of marking time and of a return to sound rules of finance was a Radical and not a Socialist policy. M. Blum could no longer restrain the influence of irresponsible elements upon his Government. The success of the Paris Exposition, which was to have opened on May 1, should have restored vigour to the economic activity of the country, but the bad spirit shown by the workmen delayed the preparations. The Exposition became the theatre for the manoeuvres of syndicalism. Public opinion became irritated at seeing the formation of a class of privileged persons to whom everything was permitted, who considered themselves beyond the law and who claimed the right to decide about everything, even in the domain of foreign policy.

In a speech on May 7, M. Blum pronounced himself unequivocally in favour of a long period of marking time, and rejected the proposals of the syndicalists. He declared himself a partisan, at any rate for the time being, of the authority of the employer and the discipline of labour. He proclaimed that "France cannot continue to live as it has lived during the past few years. No State can live with the obligation of procuring each year, outside the budget, sums almost equivalent to the normal budgetary receipts." Rise of prices and diminution of production were the outward signs of the failure of the Socialist policy. No one denies that M. Léon Blum and his ministry realized some necessary reforms. But certain of these reforms, for example, the five-day week, went farther than was intended, and the success of the whole policy was compromised by lack of discipline among the working-classes and by the resulting disorder.

The cabinet resigned because it found itself faced with the inevitable consequences of its policy of excessive expenditure and of repeated calls on an overworked credit which had suffered everything calculated to bring about a failure of confidence. In his speech at Luna park on June 6, M. Blum tried to put the responsibility for the failure of his experiment on to the resistance shown by the employers, and suggested that far-reaching reforms could only be realized under a Socialist dictatorship. The rapid diminution of gold stocks in the Bank of France, which had fallen, since the coming into power of the Blum cabinet, from 80 milliard Poincaré francs to less than 50 milliard, a figure considered indispensable for national defence, finally determined the Finance Committee of the senate to take the responsibility for a ministerial crisis. The senate, by 188 votes to 72, refused the Government the powers granted to it by the chamber, and the next day rejected an amended proposal by 168 votes to 96, with 35 abstentions. During the night of June 20-21, the Blum cabinet handed in its resignation to M. Lebrun, president of the republic.

In the circumstances in which the crisis took place, a Front Populaire cabinet under Socialist leadership could only be succeeded by a Front Populaire cabinet under Radical leadership, and the man asked to form this cabinet could hardly be other than M. Camille Chautemps. M. Blum agreed to the combination, and asked the National Council of the Socialist party to allow its members to enter the Chautemps cabinet, which could thus be rapidly constituted. There was no difficulty about this. Most of the ministers and secretaries of State retained their functions. M. G. Bonnet, former ambassador at Washington, became finance minister, while other ministers were M. Vincent Auriol (Justice), M. Campinchi (Marine), M. Chapsal (Commerce), M. Février (Labour), and M. Lebas (Post and Telegraphs).

There was only one way open to the new Government—the way indicated by the experts' plan for financial rehabilitation; plenary powers were obtained from parliament in order to put this into effect. The franc was detached from gold, that is to say, it became a free, floating monetary unit no longer convertible into

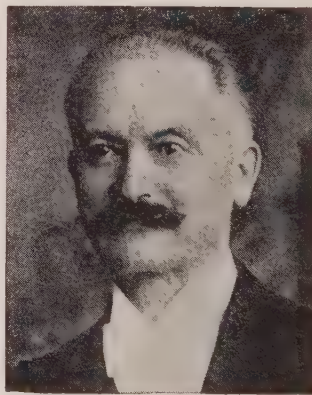
a fixed quantity of gold. This was the only means of checking the gold withdrawals which were becoming more and more frequent. The tripartite agreement with the Banks of England and of the United States remained in force. M. G. Bonnet applied himself with great perseverance to the tasks of improving the financial situation and balancing the budget. The pound, which was worth 110.55 francs, went up to 129. The franc, nine months after a reduction of 33%, suffered a further devaluation—not the last either—of 14%. The result of this constant devaluation is the ruin of the middle class by the reduction, without profit for anyone, of its purchasing power.

The immediate measures taken by M. Bonnet consisted of an increase of 15,000 million francs in the advances made by the Bank of France to the Treasury, new taxes, particularly direct taxes, and increase of old taxes. But the reduction of expenses was rendered useless by the increase in prices which compelled the Government, in November, to proceed to a readjustment of officials' salaries. Budgetary equilibrium, which had been established with such great difficulty, was thus perpetually endangered anew. Financial difficulties were further complicated by the need for heavy expenditure on national defence. In December the franc oscillated between 145 and 150 to the pound. The deficit in the balance of trade, despite some improvement in business, amounted during the year to more than one milliard francs a month. The violent reduction in hours of work diminished production and export possibilities to a dangerous degree.

By the declaration of Rambouillet on Oct. 2, the cabinet affirmed that, contrary to the theories expounded by the Socialist and Communist newspapers, psychological and political, rather than technical, reasons explained the speculative attack on the franc. Tension from outside and the fear of renewed social disturbances were chiefly responsible. The Government enumerated the measures they proposed to take in order the better to apply those principles of public order and social discipline on which they had taken their stand. But they were constantly hampered in the operation of this program by the policy of the C.G.T. and the resistance of one section of the chamber. The cantonal elections, which took place on Oct. 10 and 17 throughout the whole of France except the Seine, showed a definite retreat from Communism and a success for the parties of order, and indicated approval of the senate's policy. They consolidated the power of the Radical-Socialist party, and even placed it in a position to do without the assistance of the Communists in parliament, and even of the Socialists if the Centre and Right parties were not too deeply divided.

The success of the Exposition would have been much greater if the opening had not been delayed by lack of co-operation on the part of the workmen, and if uncertainties abroad had not reduced the number of foreign visitors. The total number of visitors was over 31,000,000, but there had been over 35,000,000 at the Colonial Exhibition.

The foreign policy of the Blum and Chautemps cabinets remained, under M. Yvon Delbos, faithful to its principles of collective security, collaboration with the League of Nations, and friendship with Great Britain. The civil war in Spain and the influx of refugees caused great difficulties on the Pyrenees frontier. The policy of non-intervention in Spain, successfully advocated



ALBERT LEBRUN, President, France



France and Great Britain, was observed by the French Government, but local authorities, and even certain ministers, favoured the passage of arms and ammunition for the Valencia Government. The Nyon Conference organized the policing of the seas; and attacks on merchant vessels practically ceased.

**Trade and Communications.**—France, thanks to the quality of her soil and to her climate, is extremely fertile, and the variety of her products is remarkable. The country produces itself about 50% of what it consumes. The grain harvest varies from year to year between 65 and 98 million quintals. In 1933, it amounted to 98,611,000 quintals, in 1936 to 66,502,000 quintals. Agricultural production in general was poor during 1936, partly owing to unfavourable weather conditions and partly to economic conditions which pressed particularly hard upon the peasants. As regards wine, France occupies a privileged position in the world. She produces more than any other country: 39,499,000 hectolitres in 1936, with an average of 57,000,000 hectolitres for the three previous years. There was an improvement in 1937, and the production figure rose again to 51,375,000 hectolitres. The value of agricultural products is gradually being restored.

In this connection mention must be made of the recent creation, in Aug. 1936, of the Office du Blé, which has not produced all the results hoped for from it.

France is particularly rich in iron ore, especially since her recovery of Alsace and Lorraine, and she is not infrequently among the foremost countries of the world in its production. Her reserves are about 18 milliard tons. Production in 1936 amounted to 33,208,000 tons, an increase of 1,000,000 tons over the preceding year. The amount of coal mined diminished somewhat, the figure for 1935 being 47,107,000 tons, while that for 1936 was 46,147,000; but since 1937 it has risen again as a result of measures adopted on Sept. 14, 1937, allowing of departures from the 40hr.-week regulations.

Industry occupies 39.1% of the active population in France, as against 12.1% engaged in commerce and 35.6% in agriculture. The textile industry represents nearly a quarter of the industrial production of France. Mechanical industries occupy 935,000 workmen, and rank second among the country's export industries.

Imports and exports for 1937 were valued at (in 1,000 francs) 23,15,578 and 23,935,241 respectively, as compared with 1936 figures of 45,398,044 and 15,453,625.

The deficit for 1936 amounted to 9,944 million francs, an increase of 82% on the previous year. In 1937, the deficit showed a considerably greater increase, amounting to over 18 milliards. The share of the French colonies in the external trade of the mother-country continued to increase, amounting to 28.5% of the imports and 33.4% of the exports.

The total tonnage of the French Mercantile Marine in 1936

#### Movement of Shipping in Six Chief Ports

Marseilles and neighbouring ports . . . . .	9,251,319 metric tons
Rouen . . . . .	8,002,404 metric tons
Le Havre . . . . .	5,775,881 metric tons
Dunkirk . . . . .	4,600,088 metric tons
Bordeaux and neighbouring ports . . . . .	4,302,201 metric tons
Nantes and St. Nazaire . . . . .	3,420,735 metric tons

as 3,020,442 tons. Total movements of shipping during 1936, entering and leaving harbours, numbered 170,725 ships, a gross tonnage of 143,357,453 tons, an increase over 1935 of 4,390 ships and 1,950,000 tonnage. Passengers taken: 4,979,717.

The year 1936 was a bad one for the French railways (about 7,120mi. of line). The deficit amounted to 3,977 million francs. During 1937 the Government, in hopes of remedying the situation, decided on the fusion of the seven great companies into a Société nationale des Chemins de Fer, which came into operation on



GEORGES BONNET, French minister of finance in 1937

Jan. 1, 1938. Gross receipts for 1937 showed an increase of 2,437,058,000 francs over 1936. Over 2,210mi. of line have been electrified, not counting the Paris-Marseilles line, where trains drawn by Diesel electric engines are in operation.

There are some 384,200mi. of roads in France. Autostrades are planned, and one, from Paris to Le Havre, is already under construction. There are about 9,550mi. of navigable waterways, of which about 4,035mi. are main waterways. The aeroplanes of the Air-France Company, constituted in 1932, covered in 1936 a distance of 5,973,900mi., transporting 66,670 passengers (an increase of 7.95% over 1935) and more than 1,260 tons of freight.

**Finance and Banking.**—Since 1936, two devaluations have taken place in France. By the first, on Oct. 2, 1936, the franc lost 33% of its value, while the second of June 30, 1937, instituted a new basis, the "floating franc." At that time the pound was worth 129 francs; at the end of Dec. 1937 it was oscillating between 145 and 150.

On Dec. 17, 1937, the Chamber of Deputies voted the budget for 1938. The figures were: receipts 54,600,557,808 francs, expenditure 54,599,318,506 francs. The budget for 1937, the receipts for which were fixed at 43,481,899,289 francs, shows a deficit of 4,589,268,442 francs. The national debt on Dec. 31, 1936, amounted to 355 milliards.

On June 24, 1937, the gold holdings in the Bank of France amounted to 54,859 million francs; on Jan. 13, 1938, they amounted to 58,932 millions. Savings banks' balances due to depositors on Dec. 31, 1936, amounted to 34,920 million francs in ordinary savings banks, 23,974 million francs in Post Office Savings banks, making a total of 58,894 millions, as against 62 milliards in 1935.

**Education.**—Education is conducted in France either by the State institutions, or by "free" institutions which are for the most part Catholic. Education in general is under reorganization, but at present consists of three stages. Examinations at the end of the two first stages allow the student to proceed to the third stage. In every Commune of France there is at least one State elementary school. Education in the first two stages is free. In 1937, there were 70,000 elementary schools, with 4,411,000 pupils. In 1935, there were more than 160,000 pupils in the State secondary schools (*collèges* or *lycées*). There were then 73,852 university students in the whole of France, a decrease of 8,366 from the previous year.

**Defence.**—Military service is compulsory for a term of 2 years.

Army	
Troops stationed in France in peace time . . . . .	400,000 men
Total strength in peace time . . . . .	680,000 men
Reserves . . . . .	4,000,000 men
Maximum strength in war time . . . . .	8,000,000 men
Air Force	
Total strength . . . . .	40,000 men
Navy	
Total strength . . . . .	65,000 men
Total tonnage . . . . .	700,000 tons
Tonnage of ships of the line . . . . .	221,000 tons
Tonnage of submarines of the line . . . . .	84,000 tons

#### Budget figures for 1937:

Army . . . . .	5,857,000,000 frs.
Air . . . . .	1,240,000,000 frs.
Navy . . . . .	1,811,000,000 frs.



(See also ARMIES OF THE WORLD; POPULAR FRONT; SOCIALISM; WATER POWER.)

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**Franco, Francisco** (1892– ), Spanish general and revolutionary leader, since Oct. 1, 1936, head of the insurgent government in Spain, was born in Galicia. After military service in Morocco, he became a colonel in 1926, and served under the Spanish republic of 1931 in the Balearic islands, being later transferred to Morocco again. In 1935, he was made chief of staff. Under the Lerroux-Robles government he became governor of the Canary islands. On the outbreak of the civil war in June 1936, he flew to Tetuan, in Spanish Morocco, and there organized the transport of Foreign Legionaries and Moorish troops to the Spanish mainland, whither he soon followed.

After the death of Gen. Sanjurjo, Gen. Franco became military leader of the insurgents, and on Oct. 1, 1936, was solemnly invested at Burgos with the titles of "Commander-in-Chief of the Spanish Army" and "Chief of the Spanish State." He at once began a siege of Madrid, but, largely owing to his detour to relieve Toledo, his expectations of that city's early fall were not fulfilled.

On April 20, 1937, he issued a decree, by virtue of which he became the political, executive, and military dictator of a totalitarian State, and on Aug. 5 he assumed the leadership of "the Spanish Phalanx of Traditionalist and Offensive National Syndicalist Juntas."

After his march into and conquest of the Basque country in June, he appealed in July to the Powers to grant belligerent rights to the Spanish rebel forces, and on Aug. 27 exchanged congratulatory messages with Signor Mussolini after his capture of Santander. For his later activities in relation to the civil war, see SPAIN and SPAIN, CIVIL WAR IN.

**Franklin, Edward Curtis** (1862–1937), American chemist who became internationally recognized as an authority on the ammonia system of compounds and liquid ammonia as an electrolytic solvent. In 1929 he retired from the chair of organic chemistry which he had held at Stanford university since 1903. The Nichols Medal was presented to him on the expiration of his term as president of the American Chemical Society in 1925. He died at Palo Alto, Calif., Feb. 13, 1937.

**Freemasonry.** Improved economic conditions resulted in the reinstatement of approximately 50,000 Master Masons, following suspensions or demissions during recent years. Losses, shown as 144,402 in 1934, were reduced to 66,261 in 1937, leaving a total membership of 2,599,250 among 15,826 lodges. Seven jurisdictions out of fifty (the forty-eight States, District of Columbia and the Philippines) revealed gains, with many more indicating an increasing number of applicants. Local relief through lodges was increased, aided by improved budgeting of lodge finances.

Educational work, covering the history, symbolism and philosophy of the Fraternity and suggestions for the practical application of Masonic teachings in good citizenship, received ardent support in grand and local bodies. The Masonic Service Association of the U.S. (organized 1919) has been a continued weighty factor in this activity. The informal annual conferences of Grand Masters and Grand Secretaries, held at Washington, D.C., each February, contributed their efforts in related movements.

Forty-six Grand Lodges participated in the 1937 conferences.

The Grand Lodge of South Carolina celebrated its bi-centenary in April, and Texas its centennial in December. The Supreme Council 33°, A.A.S.R., S.J., completed its gift of \$1,000,000 to George Washington university for the establishment of a school of government, and continued its moral support to opposing diversion of public funds for sectarian purposes. The Supreme Council 33°, A.A.S.R., N.M.J., contributed to humanitarian work in a fourth gift (now totalling \$140,000) for researches in the cause and prevention of dementia praecox.

**Great Britain.**—The Duke of York was installed as Grand Master Mason of Scotland, Nov. 30, 1936, but upon ascending the English throne as George VI, resigned the office in keeping with old customs. On June 30, 1937, he was invested as a Past Grand Master of the United Grand Lodge of England. He is the fourth British Mason to ascend the throne. A severe loss was the death on Nov. 5 of Sir Philip Colville Smith, C.V.O., who had been Grand Secretary since 1917.

**The Continent.**—The citizens of Switzerland by a vote of 514,539 to 233,481, on Nov. 28, defeated a proposed amendment to the Constitution by which all secret societies would be forbidden. The bill had been rejected previously by the Swiss Council of State, Senate, and Parliament. Catholic laymen supported Freemasons in this election, the former sensing the move to eventually cripple all rights of free association, such as had followed the suppression of Freemasonry in Italy, Germany, Turkey, Spain, and Brazil under dictatorships. Close ties between Scandinavian and English-speaking Freemasonry have been strengthened through the visits of American Grand Masters to Denmark and Sweden in 1936, where King Christian X and King Gustav V, respectively, are Grand Masters of Masons. (J. H. T.)

**French Academy.** The French Academy held in 1937 four important official functions, at which the following were received into the Academy: Joseph de Pesquidoux, famous for his work on the occupations and pleasures of the countryside in southern France; Edouard Jaloux, a critic of great renown; Admiral La Carze, who is known chiefly for his work as minister for the navy during the war; and Monseigneur Greute, bishop of Le Mans, who is to keep up the tradition of great prelates within the Academy. René Doumic, one of the most influential of the academicians and known as a critic, died. Among the numerous prizes and distinctions awarded by the Academy, the most notable are: the *prix de littérature* to Maurice Magre, a poet; the *prix du Roman* to Guy de Pantalès; and the *prix Brieux* to Gabriel Marcel for his plays. (D. S.)

**French Congo:** see FRENCH EQUATORIAL AFRICA.

**French Equatorial Africa.** The area of French Equatorial Africa is c. 912,000 sq.mi., and the population (1934) was c. 3,319,000, of whom about 4,700 were Europeans. The rapid development of French Equatorial Africa is hampered by its tropical climate and vegetation and by the scattered and backward nature of the native population. The governor-general, M. Preste, has established a systematic program of production, administrative reforms, public works, and protection of the natives. The cultivation of cotton produces excellent results in the Ubangi, and coffee-growing also promises good returns. In the tropical forest region, timber is the principal export, though the sale of *okoumé* in Germany has become more difficult. The problem of transport remains predominant, but the difficulty of portage is diminishing with the construction of roads, 875mi. of which were opened in the year beginning in July 1936. Considerable progress has been realized



by the opening of the Congo-Ocean railway from Pointe Noire to Brazzaville. The Congo-Ocean transported in 1936, 23,548 travelers, 31,000 tons of merchandise for import and export, more than 18,400 tons of merchandise for local use, and quantities of ballast for the harbour works at Pointe Noire. The receipts amounted to 14,173,065 francs. The subsoil is found to be even richer than was thought in copper, gold, lead, tin, manganese, zinc, and diamonds, but the nature of the soil and the climate make exploitation difficult. Exports, which for the first quarter of 1936 amounted to 191,000 tons, rose to 272,000 tons for the first quarter of 1937.

(R. PIN.)

**French Guiana,** a French colony in North-eastern South America, including the separate interior Territory of Inini. Language, French; capital, Cayenne (pop. 17,704); governor, René Veber. The area, including Inini (area, 5,000 sq.mi.), is 34,740 sq. miles. The population of French Guiana was 29,085 (including 2,934 foreigners), in 1936, with 15,510 in Inini. The colony is administered by a governor and general council and is represented in the French parliament. Inini has a separate council. The famous French penal colony, Devil's Island, located on the northern border, is administered separately. In Sept. 1937 the French labour arbitration act of 1936 was extended to Guiana by decree. During 1937 the colony showed considerable development due to the devaluation of the franc, which stimulated gold production. Imports and exports in 1936 totalled respectively 5,343,821 fr. and 26,536,884 francs. Imports, chiefly foodstuffs and manufactured articles, came from France (64.2%) and the United States (8.8%). Practically the entire exports, comprising principally 23,726,000 fr. gold, and rosewood, went to France. The first nine months of 1937 showed 25% increase in imports and 60% in exports.

French Guiana has regular external steamer and aeroplane service, 12km. of railroad, 250km. of highways, and good interior waterways. The monetary unit is the French franc (value: 3.4¢ U.S.).

**French Guinea:** see FRENCH WEST AFRICA AND THE SAHARA.

**French Indo-China.** The area of French Indo-China is about 285,000 sq.mi., and the population (1936) was c. 23,230,000, of whom about 30,700 were French.

Two very important measures have been taken in favour of the natives. One of these, by a decree of July 23, 1937, allows young natives who have passed certain examinations to be recognized as French citizens with full civil and political rights, merely by entering a demand for citizenship with the appropriate tribunal. A particular result of this measure will be to eliminate by degrees the French low-grade officials serving in Indo-China. Another measure is the regulation of work on a large scale on lines adopted from France.

In the different countries composing French Indo-China, the main features of progress during 1937 have been as follows: In Yochin-China, new native schools have been opened. In Cambodia, sanitary organization has been developed, and usury, which has prevented the growth of a class of peasant proprietors, combated. As regards Laos, a distant country difficult of access and therefore backward, efforts have been made to improve communications, both by air and by road, with the interior. In North Annam, irrigation of the Nghé An was begun, thereby making it possible to irrigate 86,500ac. and to obtain from this vast area two annual harvests of rice instead of one. In Tongking, the Government did much to alleviate the widespread distress caused by the flooding of the Red river.

Air communications have been speeded up, and the journey from Paris to Saigon can now be accomplished in five days.

(R. PIN.)

**French Literature.** The most notable event of the year has been the award of the Nobel prize for literature to Roger Martin du Gard for the seventh part (in 3 vols.) of his saga: *Les Thibault*. The six previous parts were the somewhat lurid tale of the inner life of a rich family. The three volumes which won the Nobel prize describe mainly the activities of a group of revolutionaries (to which a Thibault belongs) immediately before the war of 1914. As a work of art, this novel is rather below the high standard of the other volumes; but no doubt its pacifist sentiments touched the prize-givers.

Georges Duhamel also added two volumes to his *Chronique des Pasquiers: Le Désert de Bièvres* and *Les Maîtres*: both contain an admirable description of intellectual life in Paris, the first among students, the second among professors. These volumes are, if anything, better even than the first volumes of the series.

Jules Romains also added two volumes to his *Hommes de Bonne Volonté: Mission à Rome*, which is a tale of church intrigues at the papal court, and *Le Drapeau Noir*, which deals with 1914 and the coming of the war in a more concise and objective way than Roger Martin du Gard. Jules Romains published an important racial political poem: *L'Homme Blanc*.

Not all the French writers, however, have succumbed to the saga fashion. Maurois has turned historian. His *Histoire d'Angleterre* has established itself at once and been highly praised by professional historians for its impartiality (a quality rarely, if ever, reached by a historian writing about his own country), its clarity, and its elegance. But Maurois has not forgotten his earlier trade and has delighted his public once more with a fantastic story: *La Machine à Lire les Pensées*.

Giono writes "epics" in prose rather than novels: *Bataille dans la Montagne* describes tremendous floods in an Alpine valley and contains some descriptions of nature in convulsion which are among the best in French literature.

Malraux, from his adventures in Spain, has also constructed an "epic" narrative, *L'Espoir*, relating, with an astonishing mixture of enthusiasm, objectivity, and extreme realism, incredible episodes of the civil war.

Céline, today the undoubted master of the realist tradition, has published a wild and violent attack against the Jews and the Soviets, set in the form of an extravagant lyrical essay, *Bagatelles pour un Massacre*, worthy of his previous successes, *Mort à Crédit* and *Voyage au bout de la Nuit*. His power in the use of popular or imaginative language gives him a lasting value.

At the other end of the intellectual world, Paul Valéry has published a very sophisticated piece of high literature, *L'Homme et la Coquille*. His appointment at the Collège de France as professor of poetry is something of a national event.

Thibaudet's *Histoire de la Littérature Française de 1789 à nos jours*, published late last year, should be recalled as the most thought-provoking book of its kind in French, in which full justice is done at last to Balzac, Baudelaire, and Hugo.

Among outstanding autobiographies are André Gide's *Journal* (in complete works chronologically arranged); Julien Benda's *La Jeunesse d'un Clerc* and *Un Régulier dans le Siècle*; Ella Maillart's *Oasis interdites* (travels in Central Asia). Romain Rolland's *Journal* is deposited in a Swiss library, and will be available in twenty years' time.

(D. S.)

**French Pacific Islands:** see PACIFIC ISLANDS, FRENCH.

**French Somaliland:** see SOMALILAND, FRENCH.

**French Sudan:** see FRENCH WEST AFRICA AND THE SAHARA.



## French West Africa and the Sahara.

The area and population in 1934 were as follows: area, 1,604,000 sq.mi.; population 14,469,000, including 42,350 Europeans.

**History.**—French West Africa was less disturbed than North Africa by the repercussion of events in Europe and the application of social legislation. Only a few riots were recorded, unimportant except for that at Dakar among the black French electorate. On the other hand, economic difficulties were much in evidence, and the great development effort undertaken by Governor-General Brévié (now in Indo-China) and continued by successor M. de Coppet, was paralyzed by the poverty of resources and the financial crisis.

The minister for colonies, M. Marius Moutet, who inspected Senegal and Mauritania in the autumn of 1936, visited Sudan, Dahomey, and Togo from March 23 to April 21, 1937. His journey demonstrated the rapidity and ease of air and land transport. In two days he went from Paris to Gao, on the Niger, 2,500 mi. by Air-France and Air-Africa planes. He returned convinced that the first condition of economic development in the Sudan is the increase of the population and consequently the growth of foodstuffs. The creation of a "black peasantry," advocated by M. Delavignette, today director of the École Coloniale, is therefore one of the first items of the economic program. "It is through the individual, through the man, that Africa must progress," said M. Moutet on his return. "The population of French West Africa can increase in one generation from 15 to 30 millions, on condition that we pursue a policy of health measures, native education, improved agricultural methods, and development of the soil." This is one of the objects of the great works undertaken on the Upper Niger, the barrage at Sansanding, and the Sotuba canal, which is to irrigate the ancient kingdom of the Macina, formerly rich and populated, today suffering the encroachment of the Sahara. This region is particularly favourable for the cultivation of cotton of excellent quality, the first bales of which are now beginning to arrive on the European markets. But at the same time attempts are being made to develop the cultivation of foodstuffs (vegetables, rice, cereals) in order to nourish the black population.

**Agriculture.**—Senegal, Mauritania, and the colonies on the Atlantic seaboard have suffered from the decrease in price for oil-products on the European markets. Peanuts and copra are their chief products. The price of peanuts, the one source of wealth of Senegal, has gone down considerably; customs dues on foreign peanuts entering France have been reduced by one-half, licences for the import of foreign peanuts have increased excessively, costs of transport have gone up, and an export duty has been imposed. On the other hand, articles imported from France have gone up, so that the native has had to suffer too from events in the mother-country. Trade nevertheless is increasing; for example, in Guinea (total of 189 million francs in 1936, chiefly gold and bananas). New markets have allayed fears of over-production of cocoa and bananas. Attempts to apply social legislation were quickly abandoned; they would have had a disastrous result in this country where the native is naturally lazy.

**Communications.**—Communications with North Africa by aeroplane and car, the improvement of the Saharan tracks, and the exploration of the Great Desert, combined with increased safety of travel in it, have all formed the object of successful efforts on the part of both military and civil authorities in French West Africa and in Algeria. The well-defined track from Algeria to the Gulf of Guinea by El-Golea, Tamanrasset, Agadès, and Zinder makes it possible to cross the Sahara in comfortable cars. There are quite well-organized hotels on the route. A weekly service runs to Tamanrasset, to which travellers are drawn by memories of a

saint and of a hero—Père de Foucault and General Laperrine. The Hoggar has become a tourist centre (Tropical Transport Service of cars). The Air-Africa aeroplane is even quicker. An Algerian trade mission visited the regions of the Niger in 1937. Throughout the year no incident disturbed the security of the desert. Financial reasons delay the construction of the Trans-Saharan railway. But the Sahara is definitely conquered, and is becoming the backbone of the French African empire. (R. PIN.)

**Fruit:** see APPLES; BANANAS; GRAPEFRUIT; GRAPES; LEMONS AND LIMES; ORANGES; PEACHES; PEARS; PINEAPPLES; PLUMS AND PRUNES.

**Fruit Insects:** see ENTOMOLOGY.

**Functionalism:** see ARCHITECTURE: "Functionalism."

**Fungi:** see BOTANY: *Fungi*.

**Furniture Industry.** There are over 3,000 recognized manufacturers of furniture in the United States who employ nearly 130,000 workers. The annual wages paid to these workers is about \$120,000,000 and the annual value of their products at wholesale runs to about \$450,000,000. Furniture manufacturing is divided into the following classes: upholstered furniture; case goods (dining and bedroom furniture); novelty furniture, such as desks, tables, etc.; kitchen furniture, including breakfast sets, etc.; reed and fibre furniture and metal furniture.

It is estimated the percentages of the different kinds of wood used in the manufacture of furniture at the present time are: birch 11%; walnut 2½%; mahogany 2%; gum 27%; maple 10%; oak 12%; all other hardwoods 35½%. Today there is about an even division in the use of walnut and mahogany, with walnut leading slightly in the upper priced brackets. For less expensive furniture, a great deal of gum and birch is used.

There are no statistics for the output of the furniture industry in Great Britain, but the industry has increased greatly since the World War, much new capital being invested both in the manufacturing and in the retail business. English manufacturers produced large quantities of antiques in the style of Adam, Sheraton, Chippendale and others.

Nor are there any statistics for the volume of furniture manufacturing in France. In Paris or its vicinity are upwards of 2,000 manufacturing firms, the value of whose exports, largely reproductions of traditional periods, amount to a considerable sum. (See also INTERIOR DECORATION: *Furniture*.) (L. KAR.)

**Furs.** The year 1937 was disappointing to the wholesale branch of the fur trade. Production was heavy in the first half of the year. Credit was extended too freely. There was over-expansion and over-buying. Skin prices were inflated. Production costs were higher than in 1936. Consumer demand decreased, weather conditions were unfavourable. Prices fell as much as 60% during the second half of the year. Buying by retail stores practically ceased in the fall. Over 160 insolvencies were reported in the American fur trade in 1937 as compared with 93 in 1936 and 86 in 1935. Most of these failures were in New York. Liabilities totalled over \$3,572,904; almost twice the amount recorded in each of the three previous years. The year ends with the American fur trade facing 1938 on a price basis, so far as its raw material is concerned, similar to the basis of 1934; but with the prospect of a reduced supply of fresh peltries from the United States, Canada, and China. The carry-over of unsold fur skins from the 1936-37 crop, however, is sufficiently large to minimize the possibility of any sudden upturn in prices because of the shorter supply in 1938. America imported over \$81,000,000 worth of furs and exported over \$16,000,000 worth of furs and



skins during 1937. These totals were somewhat greater than the figures for 1936.

The Russian fur trade transacted an international business during 1937, with the United States, Great Britain and France the largest buyers at the two auction sales held in Leningrad in March and July. The London fur market transacted a large business on Russian, Canadian, American, and British Colonial furs. It was the greatest market for silver fox from Canada and Scandinavia. Australia and New Zealand sold about 80% of their respective catches of rabbit skins to the United States, valued at around \$9,000,000. The China fur trade came to a standstill in August, but by that date most of the 1936-37 production of furs and skins valued at about \$30,000,000 had been sold and shipped with the United States the market for the larger proportion. The 1937-38 season for China furs was practically abandoned because of the Japanese invasion of China.

Taken as a whole the world's fur trade in 1937 was less than in 1936. Import restrictions, quotas and prevailing "exchange" limitations prevented the free flow of furs in international trade. See also FASHION AND DRESS: *Furs*. (W. J. Br.)

**Gallwitz, Max von** (1852-1937), German army officer, who bombarded Namur, took part in the German offensive against Russia on the Narew river in Aug. 1915, and led the 11th army in the Serbian campaign and the 7th army on the Verdun front. Born at Breslau, May 2, 1852, he took part in the Franco-Prussian War before entering the War Academy. Promoted to captain in 1886, he served on the general staff and was later transferred to the war ministry. After serving as commander of the 15th division, he became inspector-general of field artillery in 1911. He was ennobled in 1913 and entered politics after the war serving as a member of the Reichstag from 1920-24. His death occurred in Naples, April 19, 1937.

**Gambia,** a British crown colony and protectorate in West Africa, extending up the banks of the River Gambia as far as Yarbutendi. The governor is Sir Wilfrid Thomas Southey, K.C.M.G., K.B.E., appointed in 1936, and the capital is Bathurst. The area is c. 4,132 sq.mi., and the population (estimate, Dec. 1936) 197,811. The colony, as distinct from the protectorate, comprises Bathurst, Georgetown, and some adjoining land, with a total area of 69 sq.mi. and a population (1931 census) of 14,370. Elementary and secondary education are provided by missions and Government grants, and a committee of Mohammedans runs the Mohammedan school. There is a Government manual training centre and a school for the sons of chiefs at Georgetown. The chief exports are ground-nuts, hides and skins, and palm kernels. Total exports for 1936 amounted to £501,238, and imports to £82,476. There is no telegraph system, and no railway; internal communications being maintained by four wireless stations, and mails being conveyed by Government river steamers. The Bank of British West Africa is the only bank, and West African notes and currency are in circulation.

**Gandhi, Mohandas Karamchand** (1869- ), Hindu Nationalist leader. For a biography, see *Encyclopædia Britannica*, vol. 10, p. 15. In April 1930 he inaugurated a campaign against the salt laws, for which he was interned on May 5, being released in Jan. 1931 to attend the Round Table Conference as a delegate. From Jan. 1932 to May 1933 he was again imprisoned. After the elections for the provincial legislatures in 1937 had resulted in the Congress party winning a majority in six provinces, he recommended it to accept the assurances were given that the governors would not use

their veto or set aside the advice of the ministers "in regard to their constitutional activities." At Madras on Jan. 22, 1937, Mr. Gandhi announced his retirement from Indian politics. On Aug. 4 he visited the viceroy and, besides discussing rural uplift and the condition of the peasantry, was instrumental in the raising of the ban against the entry of the agitator, Abdul Ghaffar Khan, into the North-west Frontier province; then later in the same month he was advocating total prohibition for all India.

**Gardner, Percy** (1846-1937), British archaeologist, who taught at Cambridge and Oxford and was an expert on coins for the British museum. He died at Oxford, July 18, 1937. An account of his career may be found in the *Encyclopædia Britannica*, vol. 10, p. 24.

**Garvan, Francis Patrick** (1875-1937), president of the Chemical Foundation and U.S. custodian of alien property following the World War, was born in East Hartford, Conn., June 13, 1875. Soon after graduating from Yale and the New York university law school, he became assistant district attorney for New York city and in late 1917 was chosen as director of the U.S. Bureau of Investigation. As alien property custodian following March 1919, he sponsored the establishment of American chemical manufacturing. From 1919 to 1923, he served as dean of Fordham law school. Known for his gifts to Yale and for his contributions to the cause of chemical study, he died in New York city, Nov. 7, 1937.

**Gas.** Developments in the production and utilization of gaseous fuel are giving a new emphasis to the functions of gas manufacture and supply in relation to the general political economy. Present-day fuel requirements are more exacting than has been customary in the past, and it is increasingly realized that gaseous fuel represents a means of combining the desired degree of control, flexibility, and cleanliness characteristic of a high-grade fuel with economy in the use of natural resources.

In the United States, as indeed might be expected of a nation possessing and exploiting such a vast natural wealth of petroleum, the most striking advance in gas output has been in the amount of natural gas distributed both by pipe line and compressed as "bottled gas." In 1936 natural gas represented 68% of the energy supplied in gaseous form to domestic and commercial consumers. "Bottled gas," that is, propane and butane liquefied under pressure in steel cylinders, is supplied direct to industrial and domestic consumers, and also to gas companies for distribution through mains in the smaller communities. The amount sold direct to domestic consumers in 1936 was equal in heat energy to some 10% of the total of manufactured gas, and still larger quantities are available both from the petroleum wells and the refineries. At the same time, the manufactured gas industry records an advance of 6% in its output, as compared with the previous year, the increase being for commercial and industrial purposes and for house heating. Of the total quantity sold by the manufactured gas industry, 40% was water gas, 13.6% coke-oven gas, 7% retort coal gas, and the remainder oil gas in various forms obtained by processing either oil, natural gas, or refinery gases.

Great Britain, possessing practically no home sources of oil but plentiful supplies of coal, has met the increased requirements of gaseous fuel by the carbonization of more coal in gasworks and by the purchase of increased quantities of coke-oven gas. The total quantity of gas sold in 1936 by authorized undertakings was 4.8% greater than in 1935, 1,040,000 tons more coal being carbonized, and 3,875 million cu.ft. of additional gas being purchased from coke ovens. The total quantity of gaseous fuel sold passed the 300,000 million cu.ft. mark for the first time,



coke-oven gas purchased and resold amounting to over 24,000 million cubic feet.

In Germany, also, coke-oven gas is playing an increasing part in the supply of gaseous fuel, having increased from 18% of the whole in 1924 to 70% of the whole in 1936, the quantity of gas manufactured in gasworks being about the same in both years. Thus it may be said that the entire increased demand for gaseous fuel has been met by collecting and distributing surplus gas from the coking industry. A particularly interesting development is the successful attempt to make adequate use of the large deposits of lignite, the coal resources of Germany being represented more largely by these younger coals than by the rich bituminous and anthracitic coals typical of the United States and Great Britain (see COAL INDUSTRY: *World Production*). Lignites are now being carbonized at low temperatures for the production of tars to be hydrogenated to motor spirit, and gasified in steam and oxygen under a pressure of several atmospheres, both for the production of town gas and for the production of gas to be used in the synthesis of motor spirit and oils.

The production of fuel for automobiles from indigenous resources is the concern of several European countries, Germany leading in the production of liquid fuels from coal, but, also encouraging the use of gas compressed in cylinders, while France and Italy are displaying considerable interest in the generation of gas from charcoal or coke by a producer carried on the vehicle.

Improvements in the design of appliances and a greater demand for automatic operation and control have led to more intensive study of the combustion characteristics of gas and the effect of minute traces of impurities. The work of Fulweiler in the United States and of Hollings in Great Britain has elucidated the factors affecting the production of gummy deposits, and, although the offending substance, nitric oxide, is present only to the extent of a few parts per million, practical methods of preventing the deposition of gum have been recorded. In Great Britain there has also been a notable advance in the extent to which gas is treated for the removal of the small quantity of sulphur compounds remaining after normal purification. Such processes are generally associated with the recovery of benzole, but there have also been important developments in catalytic processes having the same object in view. (See also PUBLIC UTILITIES.)

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**Gas Masks:** see CHEMICAL WARFARE; CIVIL POPULATION, PROTECTION OF; MUNITIONS OF WAR: *Chemical Warfare*.

**Gasoline.** More gasoline was consumed in the United States in 1937 than ever before. The reason is that more automobiles are on the roads, and the roads are better, and the cars driven more. Moreover, the revival from the depression, until its recent interruption, put America emphatically on wheels again.

To meet the demand of the almost 40,000,000 motor vehicles now being operated, it was necessary for the petroleum industry to provide about 527,000,000 barrels of gasoline. The increased consumption for 1937 over 1936 will be in the neighbourhood of 10%. And 1936 was a record year for gasoline use.

Practically without a connecting State highway system in 1919, the United States has built in the intervening years a connecting State system of some 520,000 mi. of roads of which 371,000 mi. or over 70% is surfaced. Altogether the country's local and State roads total over 3,000,000 miles. Most of this highway improvement has been financed on a pay-as-you-go basis by State gasoline taxes levied on the motorist. (See GASOLINE TAX.) Growth of

motor fuel demand in the United States parallels the rise in motor vehicle registrations, as the following table shows:

	Gasoline Demand (Thousands of Barrels of 42 U. S. Gals.)	Automobile Registrations (Number of Motor Vehicles— Passenger Cars and Trucks)
1936 . . . . .	481,591	28,221,291
1933 . . . . .	380,494	23,843,591
1930 . . . . .	397,770	26,545,281
1927 . . . . .	305,367	23,133,243
1924 . . . . .	196,586	17,595,373
1921 . . . . .	116,840	10,463,295
1918 . . . . .	79,949	6,146,017

An important factor contributing to the growth of automobile use and of gasoline demand, has been the ability of the American petroleum industry to keep gasoline prices at low levels. According to statistics issued by the American Petroleum Institute, the average total retail price, less tax, in 50 representative cities was 29.74¢ per gallon in 1920 when 9,000,000 cars were on the roads and in 1936 when 28,000,000 motor vehicles were operating it was 14.10¢ per gallon.

Expanding airline mileage in the United States has added a substantial figure to gasoline demand. While this is but a low percentage of total demand, its importance may be said to be in the technical development of suitable aviation fuels, which, in turn, bears direct relationship to the technical development of motor fuels. Motor fuel was first produced at refineries by straight distillation, and later by cracking. The quantity of gas produced in the cracking process increases with the improvement of the anti-knock quality of the motor fuel product. A satisfactory economic disposal of this gas was a real problem for American refineries. This problem was solved by the polymerization process. The cracking process depends for its economic utility on the conversion of heavier hydrocarbons to lighter ones of greater value, while the polymerization process is in principle the reverse, viz., the conversion of gaseous hydrocarbons to liquid ones in the form of high anti-knock motor fuel. In other words, the objective was attained and, in addition, it was found that a super-type of motor fuel could be produced.

How this development fits into the picture of automobile and aviation development can be readily illustrated. The demands of the automobile and aircraft industries for high-octane (anti-knock) fuel have increased from year to year. Since 1925 the maximum automobile speed has gone up from 60 to more than 100 m.p.h., and the cruising speed of aeroplanes from 80 to 220 m.p.h. Such increases would have been impossible without high-octane motor fuels. The requirements of automobiles may generally be satisfied by fuels of a value less than 75 octane. For aeroplanes, however, fuels of 95 and 100 octane are desirable, and for military purposes are necessary. Through the polymerization process such aviation fuel can be made. The great refining capacity of the United States will yield, it is estimated, an annual output of over 9,000,000,000 gals. from hydrocarbon gases.

With world diplomacy largely being built around aircraft effectiveness for defence, it becomes apparent that the 100-octane aviation fuel, which gives the aeroplane increased power, speed and load-carrying capacity, is today one of the world's most important strategic products.

(L. M. F.)

**Great Britain.**—Over 97% of the gasoline used in the United Kingdom in 1937 was consumed by the motor industry, and, of the total, 91.3% was imported refined gasoline, on which there was a duty of 8d. per gallon, and the remainder was produced at home by the refining of imported crude petroleum and from the treatment of coal and Scottish shale. The latest available statistics show that while gasoline imports increased by only a little over 1% in 1936, they rose 8% in 1937, while home production, encouraged by a preference of 8d. per gallon, is increasing



more rapidly. In the year 1935, in which there was abnormal development in the "oil from coal" industry, it stood as high as 5%, and although it fell in 1935—a more normal year—to 17%, the figure for 1937 is well over 20%. The 3% of light gasoline not absorbed in the motor industry is used in the heavy chemical, dry cleaning, solvents and dyestuffs trades.

Present-day motor fuels have benefited from the persistent research of petroleum technologists, mainly in the direction of anti-knock qualities, while British-produced gasoline has been greatly improved by the development of new processes, the most notable of which is the hydrogenation plant of Imperial Chemical Industries, Ltd., at Billingham-on-Tees, now producing nearly one-third of the total British output, which is marketed by the principal gasoline distributors. Of the 105,000,000 gallons produced from indigenous materials in the United Kingdom, 50,000,000 are from the gasworks and coke ovens, 33,000,000 from Billingham, and several million gallons from low-temperature carbonization and other "oil from coal" plants which aim at making the country less dependent on imported gasoline.

In 1937 the United Kingdom imported 1,356,185,000 gals. of gasoline, valued at £25,586,210, showing increases of 6.9% in quantity and 28% in value over 1936. With 169,000 more vehicles in use, mainly private cars, the average monthly gasoline consumption was 122,468,000 gals., against 113,627,500 gals. per month in 1936.

The price of first-grade gasoline was 1s. 6d. per gallon (including the 8d. tax) at the beginning of the year and 1s. 7d. in December, having touched 1s. 7½d. during the second quarter; but the price fluctuation had no appreciable effect on demand, the monthly figures pursuing the normal seasonal curves, the holiday months being the heaviest.

(A. C. CR.)

**Gasoline Tax.** The history of the gasoline tax in the United States during the year 1937, and indeed for a series of years, is the same old story. It has been increased—Minnesota from three cents to four cents; in New York from three cents to four cents; in Rhode Island two cents to three; in West Virginia from four cents to five. Temporary rate increases which had been scheduled to expire were continued in some States. Various taxes have been levied on other motor fuels in some of the States, particularly California and Kansas. Levied originally as a tax for the support of roads, this tax has proven so productive that more States are succumbing to the temptation to utilize it for other governmental purposes. In New York State two cents of the four which are collected are diverted to the general fund. Illinois had diverted \$2,000,000 for schools; and New Jersey has diverted \$7,900,000 for unemployment relief.

The yield of the gasoline taxes levied by States increased \$3,000,000 in 1937 over 1936. The growth of the tax over a series of years and its stability during the depression are truly marvelous. In only two years—1932 and 1933—were the collections of State gasoline taxes below the high point previously reached. And that high point came, not in 1929, when the total income from this source was \$491,000,000 for the entire country, but in 1931, when it exceeded \$536,000,000. Even in 1932, the lowest year, the yield was \$513,000,000. And by 1937 it had attained the sum of \$769,000,000. This is approximately six dollars per capita for every man, woman, and child in the United States. The rapid growth of this tax is astonishing. It was almost as high in 1937 as it had been in 1929; it was three times as high as it had been in 1927; and four times in 1926. It was five times as high as it was in 1923. The tax practically had its beginning in the year 1919, when the total collections from this source amounted to the modest sum of \$1,022,514. It is now 60 times that. (See also TAXATION.)

(D. F.)

**Gay, Walter** (1856–1937), American painter and dean of American artists in Paris. A brief account of his life appears in the *Encyclopædia Britannica*, vol. 10, p. 80. He died in Paris, July 15, 1937.

**Gdynia:** see DANZIG.

**Geddes, Sir Eric Campbell** (1875–1937), British industrialist, who was First Lord of the Admiralty during 1917–18 and who at the time of his death was chairman of Imperial Airways, the Dunlop Rubber Company, and 14 allied companies. The *Encyclopædia Britannica*, vol. 10, p. 84, gives the story of his career. He died at Hassocks, Sussex, June 22.

**Gems and Precious Stones.** The year 1937 witnessed no startling find of gems nor the production of any outstanding "gem of the year." Fashion is still rather shy of coloured gems, favouring ornaments of platinum-mounted diamonds. Whether this is due entirely to a wave of modern taste demanding a monochromic effect in ornament, a scarcity of fine-coloured stones, or merely the fickleness of public taste, it is impossible to say. Jewellers have made great use of the baguette or baton-cut diamond to produce pattern and variety in design, and this has definitely reduced the demand for coloured gems of moderate size and quality. Fine specimen stones will always secure attention and purchasers, but others remain at the mercy of the market. (See also DIAMONDS.)

**World Production.**—The Colombian mines being shut down has reduced the supply of emeralds of good quality. A few stones were produced at Leysdorp, South Africa, and there is news of a Swiss company having reopened the Habachthal mine in Austria, but no details of production. Fine emeralds maintain a high value, as do rubies, from sheer scarcity. The ruby production from the Mogok district in Burma, which amounted to about 30,000 carats in 1934, including the finds of native and local miners, continued this activity, but the death on Nov. 9, of Lieut.-Colonel J. F. Halford-Watkins, of Burma Mines, Ltd., a great local character and an eminent gemmologist, is certain to have an adverse effect on output. Burma produces annually about 105 tons of jadeite, most of which goes to China for working and carving. The value is about 3,000 rupees a ton.

The regular output of sapphires approximates 1,000,000 carats from Kashmir. The year's find in Queensland, Australia, is valued at £3,500. The use of amber received attention in Germany, national propaganda being aimed at a greater consumption for ornamental use. To counter-balance a drop in exports, chemists are seeking commercial and industrial uses for amber and its derivatives. The output at Samland, in Prussia, is steady at about 1,350 troy pounds annually; additionally about one-fourth of that amount is mined in Burma.

Two new instruments of value to students were introduced during 1937: a gem magnifier, by Leitz of Wetzlar, which facilitates the internal examination of faceted stones, and a simplified and smaller refractometer by Rayner and Keeler of London. In view of its increasing popularity as a gem, an exhaustive study was made of the zircon by B. W. Anderson and C. J. Payne, to which Prof. Dr. Karl F. Chudoba added the results of important investigations and recent discoveries explaining "wide diversities in the physical properties" of the stone.

Dr. Reinhard Brauns, author of *The Mineral Kingdom*, distinguished gemmologist of Bonn university, died on Jan. 28, 1937. (See also MINERALOGY.)

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**General Federation of Women's Clubs:** *see* WOMEN'S CLUBS, GENERAL FEDERATION OF.

**Genetics.** The scope of researches included under the term genetics has continued to widen very markedly during the past year, and the use of genetically controlled materials and genetic techniques by biologists in general has developed greatly. The latter phase has been most marked in cancer research, as pure strains of mice and rats differing widely in susceptibility or resistance to the spontaneous occurrence of tumours of various types are now available. The uniformity of behaviour within strains and the great diversity between them enables more precise results to be obtained with fewer experimental animals. One striking development has been the discovery that mice of resistant strains develop a higher proportion of breast tumours if suckled by females of a susceptible strain, and that, conversely susceptible strains are much more resistant if fostered on resistant females. This experiment has been carried a step farther by the removal of fertilized eggs from susceptible females, and their implantation in resistant females. At the time of the last report, though many of them were past the earliest cancer age, none had yet developed tumours, but enough of them had not lived long enough for a definite statement to be made on their degree of resistance. (*See also* HEREDITY.)

In applied genetics, the possibilities have been realized of using colchicine to double the chromosome number. When wide crosses are made between distinct species or genera, the hybrid progeny are usually sterile. Often their sterility is attributable to failure of pairing between the chromosomes of the two parents at the time of germ-cell formation. This prevents the hybrids from forming functional gametes or germ cells. When the chromosome number is doubled in such hybrids, each chromosome obtains a completely homologous mate with which it can pair, and, in plants, such doubled (allopolyploid or amphidiploid) hybrids are usually quite fertile. Doubling often occurs spontaneously, and it has also been produced by heat shocks and, in certain plants, by decapitation. Colchicine appears to provide a new, easily applied method. It therefore promises to be of wide use in plant breeding. At Harvard university a Foundation has been established for the production of tree hybrids. In Canada, tree breeding work is being undertaken in combination with plant hormone treatments which stimulate root development on cuttings and thus enable sterile hybrid varieties to be propagated vegetatively or asexually. The hybridization of wheat with various related species of grasses is being continued in the United States, Canada, and Soviet Russia, in particular, with fair prospects that large-seeded, drought-resistant types of grasses or cereals suitable for semi-arid areas may be developed. The U.S. Department of Agriculture in its 1936 and 1937 year-books has given a most complete account of genetic methods and results in plant and animal breeding. Considerable progress has been made in various countries in the breeding of disease-resistant varieties of wheat and bananas, as well as less spectacular improvements in many crops.

In Britain, co-operation between the Medical Research Council Committee on Human Genetics and certain hospitals to the end that more extensive knowledge of the effects of cousin marriages may be obtained, has been established. It is known that certain rare diseases are more commonly found among the offspring of blood relations than in the general population, but very little information is yet available in the relation of intermarriage to the general health of the offspring. An American investigation on the inheritance of allergic disease (asthma, hay-fever) has indicated that it may depend upon the action of a single pair of genes. Individuals of the genotype HH are pure normals; those of hh are pure for the allergic condition, and they develop al-

lergic disease early in life; individuals of genotype Hh may never develop the disease, or may do so only after puberty—whether they do so or not they transmit it on the average to one-half of their offspring. A further study failed to reveal any evidence of genetic linkage between the genes determining allergic disease, the AB blood groups, the MN types, and eye colour.

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**Geographical Society, American:** *see* AMERICAN GEOGRAPHICAL SOCIETY.

**Geology.** One of the most important events marking the progress of geology in 1937 was the meeting of the International Geological Congress in Moscow. This gave unprecedented opportunities for geologists from all over the world to see, at first hand, some of the great amount of excellent geological work carried out recently in Soviet Russia. The program included an exceedingly comprehensive list of excursions to such localities as the Kola peninsula, the Ural mountains, the Caucasus, Novaya Zemlya, and Siberia.

Turning to the various branches of geology, the following have been the most conspicuous lines of advance in recent years.

**Physical Geology.**—Our scanty knowledge of the ocean floor has been considerably increased by the work of such expeditions as the Snellius (Dutch) and the Murray (British). Improved methods of combining sounding with sampling, and the detection of gravitational anomalies have indicated a tectonic origin for the great ocean deeps, while important confirmation has been obtained of Darwin's subsidence theory for the formation of coral reefs. From the improved samples now obtained from the sea bottom new hypotheses have evolved for the origin of the great submarine canyons which cut into the continental shelf off some river mouths.

On land, the investigation of both valley glaciers, *e.g.*, in Alaska and the Pamirs, and of the continental ice-sheets of Greenland and Antarctica, has shown marked progress, being greatly aided by the seismic methods of ice-sounding now employed, and also by the use of aerial photography.

**Petrology.**—Of all branches of geology, petrology is in by far



**FISSURES** in Buena Vista Peak, Los Angeles, California, give timely warning of an impending and dangerous landslide





**HEAT FIELDS** of Harley Robertson, a southwestern Idaho farmer, slowly sinking and forming a steadily-widening canyon, owing to the collapse, geologists explain, subterranean caverns created millions of years ago by lava flow



**LANDSLIDE** of 1,500,000 tons of rock and earth on Buena Vista Peak, Los Angeles, California, which wrecked a Riverside Drive viaduct and endangered homes and shops



the most chaotic and undeveloped state, but it provides, therefore, the most scope for progress. The question of the classification of the igneous rocks presents a perennial problem which seems incapable of solution at present, although many ingenious schemes, mainly arithmetical in basis, have recently been put forward. Unfortunately it cannot be said that the efforts of committees for the reform of petrographic nomenclature (on both sides of the Atlantic) have been conspicuously successful.

A great deal of work has lately been carried out by British geologists on the origin of certain granite masses, and has resulted in conflicting theories, all of which are of interest. Following on recent investigations in Britain and the northern Appalachian chain, the widespread distribution of ring-structure in plutonic complexes is receiving recognition.

An important line of attack applying to igneous, sedimentary, and metamorphic rocks alike is the microscopic technique devised by B. Sander (Austria), who correlates the internal optical structure of crystals with their history of deposition or metamorphism. Both this method and the system of directional field observations initiated by H. Cloos (Germany) have been employed with striking success in America.

A great amount of descriptive petrographical work continues to appear, and its quality shows constant improvement owing, largely, to the increasing use of the universal stage for the determination of the optical properties of minerals and to the employment of various ingenious instruments now available for estimating the volumetric proportions of minerals in thin sections with rapidity and moderate accuracy. Experimental work carried out in America on silicate systems has added greatly to our knowledge of the pyroxene and amphibole groups of minerals.

**Historical Geology.**—The progress of stratigraphy is steady though not startling. Among the most notable developments has been the conspicuous success of "graded bedding" methods of solving some of the major stratigraphical problems of the Scottish Highlands.

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**George VI** (1895– ), King of Great Britain and Ireland; second son of King George V; born at Sandringham, Dec. 14, 1895, was trained for the Royal Navy, with which he served in the World War, was created Duke of York in 1920, and on April 26, 1923, married Elizabeth (*q.v.*), daughter of the earl of Strathmore. On the abdication of his elder brother, Edward VIII (see WINDSOR, EDWARD, H.R.H. DUKE OF), he succeeded to the throne on Dec. 11, 1936. On Dec. 14, His Majesty issued an

accession message to parliament, and on the 18th assumed supreme rank in the army, navy, and air force. On New Year's day, 1937, King George sent a message of greeting to the empire. On Feb. 9 the first levée of the reign was held at St. James's Palace, and on the 15th, King George went into residence at Buckingham Palace, after having two days previously been enthusiastically received in the East End of London when visiting the new People's Palace there. The early part of 1937 was largely taken up with preparations for the coronation, which took place at Westminster Abbey on May 12, amid scenes of unexampled enthusiasm, repeated in London on the occasion of the royal drives through the streets on the following days. On the 20th, the King held a review of his fleet at Spithead, and on May 24, with the royal family, attended a thanksgiving service at St. Paul's cathedral. He followed the royal custom of attending the Derby at the Epsom race-meeting at the beginning of June. From July 5 to 11 King George was in Scotland, holding two courts at Edinburgh and on the 14th and 15th visited Cardiff, Newport, Swansea, and other Welsh centres. A state visit to Belfast followed on July 28. But in spite of the press of state engagements, His Majesty found time, on Aug. 3, to spend a day at the Southwold annual holiday camp for public school boys and youths from the works and factories, which he himself had inaugurated when Duke of York, and which he had never failed to visit.

From early August to early October, King George stayed at his Scottish seat of Balmoral, and on his return visited industrial Yorkshire on Oct. 20 and 21, returning to London to open parliament in state for the first time on Oct. 26. Continuing the practice initiated by his father, the King issued a broadcast message to his people on Christmas day, expressing his hope that peace and goodwill might speedily prevail in world affairs and in the lives of his subjects.

**Georgia**, one of the original States of the United States, popularly known as the "Empire State of the South"; area 59,262 sq. mi., being the largest east of the Mississippi river; population according to the U.S. census of 1930, 2,908,506, estimated July 1, 1937, 3,085,000. Capital, Atlanta, 270,366, estimated July 1, 1937, 280,400. The next largest city is Savannah, 85,024, with Augusta, Macon, and Columbus as other important cities. Of the State's population 895,492 are urban, or 30%; 1,836,924 whites; 1,071,125 coloured; 407 other races; 13,917 foreign-born.

**History.**—In Nov. 1936, E. D. Rivers in a campaign of support for the New Deal was elected governor. As the Democratic party has no opposition in State elections, the political contest took place in the nominating primaries in September. The county unit system of voting prevails, whereby the smaller counties have

one vote each and the most populous only three. In this election Rivers received 360 votes to 44 for his two opponents. In June, 1937, 20 amendments were adopted by a vote of the people. The most important items related to old age pensions and the classification of property for purposes of taxation. In the same election the abandonment of prohibition

**BEGINNING OF A FISSURE** on an Idaho farm, which is gradually sinking into subterranean caverns **FIVE DAYS AFTER** the appearance of the six-inch fissure in the picture at the left it had widened into this crevasse





as defeated 94,575 to 23,097. In pursuance of these amendments, laws were passed setting up old age pensions, classifying intangible property and setting lower rates of taxation than those on real estate, and exempting from taxation homesteads up to \$2,000 and household furniture to \$300. The principal State officers were: E. D. Rivers, governor; John C. Wilson, secretary of State; M. J. Yeomans, attorney-general; George

Hamilton, treasurer; Tom Wisdom, auditor; William B. Harrison, comptroller; M. D. Collins, superintendent of schools, and Columbus Roberts, commissioner of agriculture. The chief justice of the Supreme Court is Richard B. Russell, Sr.

**Education.**—The State supports higher education through the University System of Georgia, consisting of 19 units, the principal ones being the University of Georgia (Harmon W. Caldwell, president) and the Georgia School of Technology (Marion L. Brittain, president). At the head of the system is a chancellor (Steadman V. Sanford). In 1936 the legislature appropriated \$3,580,000 for the system.

**Banking and Finance.**—The common schools received \$7,758,000 from the State treasury in 1937. For the various elementary institutions the appropriations were \$1,557,000. The highway department received \$19,106,000. All appropriations are for 10-year periods. The total revenues received in 1936 were \$30,445,000, the tax on motor fuel producing \$17,526,000. Other important sources were general property \$3,585,000, manufactured tobacco \$1,512,000, motor vehicles \$1,306,000, and business licenses \$1,000,000. In 1936 there were 226 banks with resources \$165,090,510.

**Agriculture, Manufacturing, Mining.**—In 1935 there were 20,544 farms and 164,331 croppers and tenants. The principal crops were wheat, 1,430,601bu.; oats, 1,428,729bu.; corn, 38,036,46bu.; cotton, 971,468 bales; sugarcane, 291,037 tons; tobacco, 1,671,213lbs.; Irish potatoes, 1,228,491bu.; and sweet potatoes, 961,963bu. The State had at the same time 25,180 horses, 333,99 mules, 1,100,138 cattle, 33,580 sheep, and 1,272,763 swine. In 1935 there were 2,858 manufacturing establishments with 142,488 wage earners, receiving \$85,570,215. The value of the products was \$523,294,587, cotton goods being the principal output, amounting to \$157,759,372. The value of the output of mines and quarries was in 1935 \$7,440,226, with granite, clay, marble, and limestone as the principal production. (E. M. C.)

**Georgian S. S. R.** A Soviet republic in the Western Transcaucasus on the Black sea, a member of the U.S.S.R. (*q.v.*), bordering N. and E. on the U.S.S.R., and S. on Turkey and the Transcaucasian republics of Armenia and Azerbaijan. Georgia is known to the Russians as *Georgiia*. The capital is Tbilisi (formerly Tiflis), and the national flag has a red ground with the name of the republic in gold in the top left square. Leading cities, with 1936 populations, are: Tbilisi, 445,100; Batumi, *c.* 100,000; Kutaisi, 72,300; and Poti, 60,000.

**Area and Population.**—Area: 70,000 sq.km. Population (1936): 3,232,000 (Georgians 68%, Armenians 11.6%). The



EURITH DICKINSON RIVERS, governor of Georgia

languages spoken are Georgian, Armenian, Abkhazian, Ajarian, Osetian, and Russian. In 1936–37 there were 4,053 schools, with 658,000 scholars and 19,000 teachers; 19 higher educational institutions, with 20,000 students; 2,000 professors and lecturers; and 120 research institutes.

**History.**—On Feb. 13, 1937, the Eighth Extraordinary Georgian Soviet Congress in Tbilisi adopted the new constitution for Georgia. From now on, since the dissolution of the Federation of Transcaucasian Republics, the Georgian S.S.R. belongs directly to the U.S.S.R. as an equal, independent Union republic, and includes the Abkhazian A.S.S.R., the Ajar A.S.S.R., the South Osetian autonomous province, 50 districts, and 2 separated towns.—Tbilisi and Poti. Ninety-six per cent of the population took part in the elections to the Supreme Council of the U.S.S.R. on Dec. 12. A number of prominent Georgian Old Bolsheviks and high state and local officials (including the premier of the republic, Magaloshvili, and his deputy) were shot in the summer of 1937 on charges of treason, terroristic conspiracy, and counter-revolutionary activities. In the Ajar A.S.S.R., also in Oct. 1937, the president and seven other officials were condemned to death for alleged plotting of an armed rising with a view to separating the republic from the Soviet Union.

**Trade and Communication.**—Sown area (1936): 3,633 sq.mi. In 1937, 76.5% peasant households were collectivized. The main activities are fruit and vine growing, silk culture, tea plantation (output, 1936, 20,000,000kgm.), tobacco plantation, grain production, and cattle breeding. Natural resources include oil, coal, manganese, timber, mineral springs (medicinal baths), and water power from rivers. The retail trade turnover (1936) was 1.9 milliard roubles, and the output of industry (1936—at prices 1926–27) was 798,000,000 roubles. The length of railway lines (1936) was 927km., including the electrified line from Tbilisi to Dzhugeli (183km.). There are several mountain motor roads. (S. YAK.)

**German Literature.** In the realm of literature, as in everything else, National Socialism has sought to organize, control and direct. All writers in Germany must belong to a branch of the Reich Culture Chamber of which Dr. Goebbels (*q.v.*) is the head. Prizes and distinctions are given to those whom he deems worthy; *i.e.*, to those whose literary interpretation is in accordance with the National Socialist ideology. Addressing German booksellers in the spring of 1937 he declared that the days were over when the possession of books was the exclusive privilege of the wealthy and intellectual classes. Therefore 760 new circulating libraries were established in smaller towns.

Although it cannot be said that Nazi patronage has stimulated successfully the writing of any works of great literary distinction, there have been changes in the character of German literature. Most important from the Nazi point of view has been the suppression to a considerable extent of works by Jewish and liberal writers, many of whom have left Germany. As to types of literature still published in Germany, there has been a decline in natural science, philosophy and religion, and an increase in political and military works and in historical novels, especially those dealing with German peasants and regional life.

Among the novelists, Hans Friedrich Blunck (1888– ), long popular because of his devotion to themes from the Nordic sagas, received official recognition after the Nazi revolution by his appointment as president of the German Writers' Society. His story of the King of the Vandals, *König Geiserich* (1936), pictures a great leader and a people of warlike qualities and pure morals upon whom Germans can look back with pride; it is interesting, based on a careful study of the documents, and not obtrusively



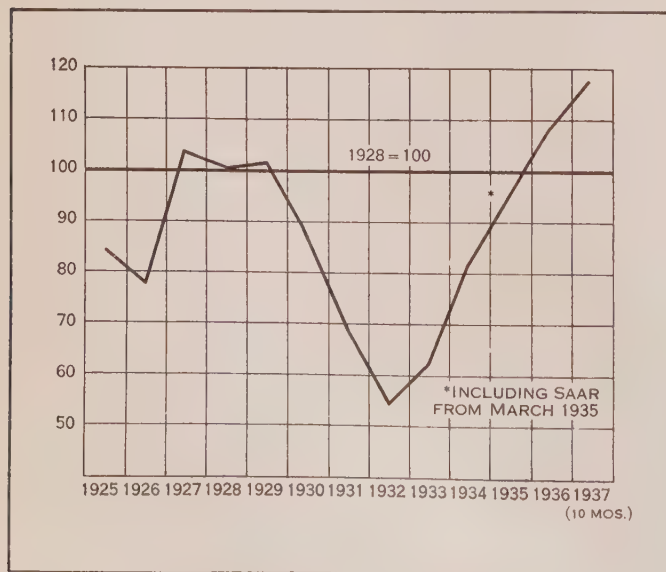
propagandist. Hans Carossa (1878– ), author of *Geheimnisse des Reifen Lebens* (1936), is a Bavarian doctor who gives his novels of South German village life the form of a journal in which the plot is delightfully interspersed with allegory and philosophical diversions. More humorous and closer to the soil are the pictures of Bavarian peasants by Ludwig Thoma (1867–1921) in *Andreas Vöst*, *Der Wittiber*, *Altaich*, *Lausbubengeschichten* and other popular novels which appeared many years before the Nazis came to power; his seventieth birthday was happily recognized by the reprinting of his shorter stories of Bavarian rural folk, *Meine Bauern* (1937).

The tendency toward regionalism is seen in Jakob Kneip (1881–). His *Porta Nigra* (1932) is the account of a young man who gave up the priesthood in order to volunteer in the World War. In his *Feuer von Himmel* (1936) the same young man returns to his home to find ruin and despair, which he helps to overcome. Another novelist of the war is Edwin Erich Dwinger (1898–). He was born in Kiel of a German father and Russian mother, captured during the war, and imprisoned in Siberia. His half-Russian origin and early acquaintance with Bolshevism gives the psychological and factual background for an intensely patriotic trilogy, in which he describes life behind barbed wire (*Die Armee hinter Stacheldraht*), the conflict between the Kolchak whites and the Trotskyite reds (*Zwischen Weiss und Rot*), and his return home (*Wir rufen Deutschland*). Volk ohne Raum by Hans Grimm (1875–), inspiring to the youth of an overcrowded Reich, is probably the most successful novel; though first published in 1926, its sales have steadily increased and reached by 1937 a total of nearly 400,000.

A notable and excellent historical work is that of the Karlsruhe schoolmaster, Franz Schnabel (1887–), *Deutsche Geschichte im 19. Jahrhundert* (4 vols., 1929–37); this history of Germany in the 19th century written from the Liberal South German and Roman Catholic point of view, is an invaluable counterpart to Treitschke's older Protestant Prussian work of the same title.

From their exile outside Germany valuable contributions to her literature continue to be made by Thomas Mann, Heinrich Mann, Bruno Frank, Lion Feuchtwanger, Stefan George, Theodor Wolff, Stefan Zweig, and others. See *Books Abroad*, a quarterly published by the University of Oklahoma Press. (S. B. F.)

**Germany**, a totalitarian State or dictatorship, known as the Third Reich, in Central Europe south of the North and Baltic seas and north of the Alps; bounded on the west by



GERMANY: Industrial production index (The Annalist)

France, Belgium and the Netherlands, and on the east by Czechoslovakia, Poland and Lithuania. Since 1919 East Prussia has been separated from the main territory of Germany by the so-called Polish Corridor. Capital, Berlin; Reich Chancellor and Leader (*Führer*), Adolf Hitler (*q.v.*).

**Area and Population.**—The area is 181,742 sq.mi.; population 66,029,000, June 16, 1933; estimated 67,300,000 (Jan. 1, 1938). In 1933 there were 32,086,000 males and 33,943,000 females. There were 756,760 foreigners, a little more than 1% of the total population; the chief foreign elements, in per cent of total foreigners were: Czechs, 24.6; Poles, 19.6; Austrians, 10.7; and Swiss 5.2. The population was distributed among the 18 "Lands" (former States) and among the chief religious denominations in 1933 as follows:

Lands	Total pop.	Evangelical	Rom. Cath.	Jews†	Others
Prussia . . . . .	39,692,167	25,387,595	12,571,007	361,826	1,613,533
Bavaria . . . . .	7,681,584	2,203,499	5,370,719	41,939	65,427
Saxony . . . . .	5,196,652	4,522,856	196,839	20,584	456,373
Württemberg . . . . .	2,696,652	1,811,797	839,678	10,023	34,826
Baden . . . . .	2,412,951	943,540	1,408,532	20,617	40,262
Hamburg . . . . .	1,075,703	952,381	63,538	16,973	185,555
Thuringia . . . . .	1,059,510	1,485,036	44,894	2,882	126,098
Hesse . . . . .	1,420,048	933,473	439,048	17,888	38,630
Mecklenburg . . . . .	804,948	704,794	31,831	1,003	7,585
Brunswick . . . . .	512,980	454,250	21,904	1,174	35,661
Oldenburg . . . . .	495,110	428,435	133,265	1,240	10,913
Bremen . . . . .	371,588	317,188	24,122	1,438	28,810
Anhalt . . . . .	304,415	320,708	13,008	901	29,708
Lippe . . . . .	175,538	165,337	8,427	510	1,264
Schaumburg-I. . . . .	49,955	48,913	674	187	181
Saarland* . . . . .	810,987	214,766	588,074	3,117	5,030
Germany . . . . .	66,029,000	41,080,024	12,760,065	502,977	2,686,560

\*Census of 1935. †Jews by religious faith; there are no census figures for Jews by blood; it was estimated that by the end of 1937 the Jews by faith had been reduced to less than 400,000.

There were (1933) 104 cities with a population of more than 50,000 each, and 567 cities and towns with more than 10,000 each. 32.5% of the population lived in villages of less than 2,000; 10.6% in towns of between 2,000 and 5,000; and 7.3% in towns of between 5,000 and 10,000; almost half the population lived in communities of more than 10,000. The cities with more than 500,000 on Jan. 1, 1937, were: Berlin, 4,251,000; Hamburg 1,097,000; Cologne, 762,000; Munich, 756,000; Leipzig, 698,000; Essen, 662,000; Dresden, 637,000; Breslau, 625,000; Frankfurt am-Main, 551,000; Dortmund, 540,000; and Düsseldorf, 515,000.

**History.**—The inner political history of Germany has been the progressive consolidation of many small States into fewer and fewer large ones. At the close of the Middle Ages Germany consisted of some 300 political territories, varying in size all the way from large States like Austria, Brandenburg and Saxony to the tiny principalities of the Free Knights with a few square miles and a score or two of inhabitants. As a result of the French Revolution and the Napoleonic upheaval, these 300 political units were consolidated into the 39 larger States which formed the German Confederation of 1815. Bismarck, by expelling Austria and annexing several territories to Prussia, reduced the number to 25 in the German Empire which he founded in 1871. As a result of the World War the number was further reduced to 17 in the Weimar Republic of 1919; they were henceforth known as "Lands" (*Länder*) and were shorn of some of their power which was transformed to the Central Government of the Republic. Under Hitler Mecklenburg-Schwerin and Mecklenburg-Strelitz were consolidated as Mecklenburg, and the Hanseatic town of Lübeck was incorporated into Prussia, thus making 15 Lands, or after the return of the Saar Territory to Germany in 1935, 16, as appears in the table above.

Hitler carried the consolidation process to its final step. Though the Lands still exist as administrative units, he has virtually united them into a single, centralized, unitary State. He rules from a single capital, Berlin. He has made the Third Reich "one and indivisible," thus accomplishing for Germany what the French



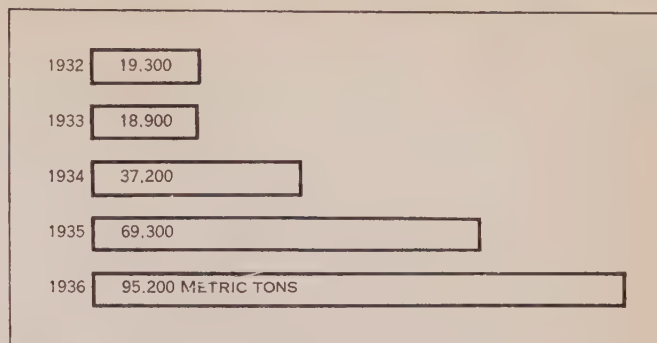
evolution accomplished for France. His Reconstruction Act of Jan. 1934 passed unanimously by the Reichstag without debate, abolished the State legislatures, transferred all state sovereignty to the Reich, and subordinated the State cabinets directly to the national cabinet. In many cases the State departmental ministries have been abolished and incorporated into the central ministry of the Reich; this process of incorporation, which involves a great many administrative details, is still going on.

Hitler as supreme Leader rules each Land through an appointee known as *Statthalter*, or through a State minister-president. An Act of Jan. 1935 transferred to Hitler the unqualified authority to appoint and dismiss the personnel of the State cabinets, which continue to operate as regional executive divisions of the Reich so far as the departmental ministries are not consolidated with the central ministries of the Reich. The local government of the municipalities or communes (*Gemeinde*) is also being made uniform for the whole Reich and placed under the direction and control of the Reich minister of Interior. Communal self-government has been suppressed; an appointed burgomaster is responsible for the town administration; he is advised by unpaid honorary councillors. The "leadership principle," involving complete responsibility to the appointing officer above and proper solicitude and care for all those ruled below, permeates the whole Reich. Thus, both in the machinery of the German State and of the National Socialist Party, the officials form a hierarchy or pyramid, with Adolf Hitler as the Reich Chancellor and Leader at the apex. Below him in the State are the Reich cabinet ministers, the *Statthalters* in the Lands, and the burgomasters in the towns. Below him in the Party are the 33 Provincial Leaders (*Gauleiter*), and the leaders in each of the 760 districts (*Kreisen*), 21,345 local groups (*Ortsgruppen*), 74,091 "cells," and 397,040 "blocks."

Parliamentary government was swept away soon after Hitler became Chancellor on Jan. 30, 1933. The burning of the Reichstag building on February 27 gave the National Socialist Party the pretext for arresting Communist deputies and functionaries, for suppressing Social Democratic newspapers, and for using strong-arm methods for rendering impotent all opponents of National Socialism. In the Reichstag elections of March 5, Hitler's cabinet, representing a coalition of National Socialists and Nationalists, won 52% of the votes cast in a total poll of about 50% of the electorate. With this majority Hitler had the Reichstag pass the Enabling Bill of March 23 by which the Reichstag lost its own grave.

The Enabling Bill vested the cabinet with full legislative powers for four years and permitted it to set aside the provisions of the constitution protecting personal liberty. Thereafter the Reichstag was occasionally summoned to hear and approve without discussion Hitler's more important decrees. The old political parties were either forced by the National Socialists to dissolve "voluntarily," or were suppressed, thus leaving the National Socialists in complete control. Germany became a one-party State. The Reichstag elections of Nov. 12, 1933, and of March 29, 1936, were therefore a farce as the expression of the wish of different political groups, for there were no candidates except National Socialists; these were endorsed by 92.1 and 98.8% respectively of the electorate. Once elected the Reichstag is of virtually no importance, for in the last three years it has rarely been summoned and has no power when it meets. The Reconstruction Act of Jan. 1934 granted the cabinet the sweeping authority of "creating new constitutional law." Thereafter legislation assumed more and more the form of government by decrees whose details may be worked out by the cabinet, but whose general purpose, in accordance with the leadership principle, represents the dictatorial authority of the Reich Leader, Adolf Hitler.

The Reich cabinet contains most of the same men as in the



PRODUCTION OF ALUMINIUM in Germany

early months of the Nazi Revolution, but has been enlarged by additional members. It comprised in Jan. 1938 the following ministers with their respective departments: Baron von Neurath (Foreign Affairs); Wilhelm Frick (Interior); Paul Joseph Goebbels (Propaganda and Enlightenment); Schwerin von Krosigk (Finance); Walther Funk (Economics); Franz Seldte (Labour); Franz Gürtner (Justice); Werner von Blomberg (War); Hermann Göring (Aviation); Walter Darré (Agriculture); Bernhard Rust (Education); Hanns Kerrl (Church Affairs); Wilhelm Ohnesorge (Post Office); Julius Dörmüller (Transportation); and four ministers without portfolio—Rudolf Hess, Hjalmar Schacht, Hans Frank, and Heinrich Lammers.

No idea of the government and recent history of Germany would be complete without some account of the Nazi (*q.v.*) Party. Its program is given under National Socialism (*q.v.*). Though comprising only about 5% of the German people, the Nazi Party virtually controls and directs the Totalitarian State through four main functions which it efficiently fulfills. (1) The Party provides nearly all the officials of the State, owing to the fact that Adolf Hitler stands at the apex of both organizations and directly or indirectly appoints all officials. Preference is given to "old fighters"; i.e., faithful and reliable men who joined the Party in the early days, and to young men who have been sifted in the Hitler youth and other Nazi organizations. (2) The Party maintains elaborate organizations, more or less paralleling the institutions of the State, for directing and propagandizing factory workers, craftsmen, peasants, professional classes, civil servants, war-wounded—in fact virtually all social groups. Membership in these is sometimes compulsory, sometimes "voluntary," but always advisable if one wishes favourable treatment. (3) For inculcating Nazi ideals in the 9,000,000 boys and girls there are several Hitler youth organizations, as well as the half year of compulsory Labour service which precedes for youths the two years of military service. (4) For dealing with internal enemies there are the Nazi Brown Shirts (*q.v.*) under Viktor Lutze, and the Black Shirts or special secret police under Heinrich Himmler.

The main aim of Hitler's foreign policy at first was to free Germany of the humiliating limitations of the Versailles Treaty. This he has largely accomplished, with the exception of the territorial and colonial clauses. After he gave notice in Oct. 1933 of Germany's withdrawal from the League of Nations, he has followed the policy of making bilateral agreements, such as the treaty of friendship with Poland (Jan. 26, 1934), the naval agreement with England of June 1935, the anti-Communist agreement with Japan of 1936 (to which Italy adhered in 1937), and the friendly understanding with Fascist Italy which was manifested by Mussolini's spectacular visit to Germany in Sept. 1937.

**Trade and Communications.**—Since 1935 Germany's exports and imports have been very strictly controlled, first by Dr. Schacht's "new system," and then by Göring's dictatorial economic power as commissioner for the Four-Year Plan. The fact



that the table immediately below shows a favourable balance of 550,000,000 marks (about \$220,000,000) for 1936 does not mean that Germany acquired that amount of gold or foreign exchange, because about half of the trade was conducted through "clearing agreements," and a considerable part of the surplus of exports over imports had to be used to pay for goods bought or money borrowed in earlier years.

The volume and value of Germany's trade during the past six years and the balance of trade were:

	IMPORTS		EXPORTS		BALANCE
	Million tons	Million marks	Million tons	Million marks	
1932 . . . . .	44.1	4,667	53.9	5,739	+1,072
1933 . . . . .	45.8	4,204	52.1	4,871	+ 667
1934 . . . . .	54.2	4,451	55.1	4,167	+ 284
1935 . . . . .	56.7	4,159	59.7	4,270	+ 111
1936 . . . . .	60.9	4,218	62.2	4,768	+ 550
1937* . . . . .	—	5,468	—	5,911	+ 443

\*Figures for volume of trade not available.

The German State Railway (*Reichsbahn*) included in 1935, 53,330km. (33,076mi.) of standard gauge lines and 879km. (546mi.) of narrow gauge lines. Privately owned lines were 3,732km. (2,313mi.) of standard and 752km. (476mi.) of narrow gauge.

German inland shipping in 1937 included 5,375 vessels moving under their own power and totalling 528,000 tons; and 12,488 canal boats and other vessels without power, totalling 5,835,000 tons. High-seas shipping included 3,579 vessels with a total registered net tonnage of 2,238,000. In Jan. 1938, as a result of the year-long trial of Arnold Bernstein for alleged evasion of German foreign exchange laws, it appeared that his two lines, the Bernstein and Red Star Lines would pass under German control.

By the end of 1937 Germany had completed the construction of 2,000km. (1,243mi.) of the new automobile highway network (*Reichsautobahn*). This completes about a third of the highways projected. They are magnificent cement two-way roads, separated by a grass strip, and without any crossings; intersecting roads use bridges or underpasses. The highways have regard for scenic beauty, and are of great economic and strategic importance. They have cost nearly 2,000,000,000 marks (nearly \$800,000,000), and have given employment to 250,000 workers, half directly and half indirectly.

The total number of motor vehicles on Dec. 31, 1937, was over 3,000,000, including 1,430,687 motor cycles, 1,216,170 passenger cars, 352,500 trucks, 18,033 busses, and 67,100 other motor vehicles.

The Post Office statistics for the year ending March 31, 1937, with the per cent of increase since 1932 in parentheses, are: letters carried, over 6,000,000,000 (29); total of postal checks, 141,000,000 (37); telephones, 3,431,100 (16); telegrams, 21,000,000; radio receiving sets, 8,511,959. The receipts were 1,886,000,000 marks and the expenditures 1,963,000,000.

**Agriculture, Manufactures and Mining.**—Germany's grain harvests were medium or poor in 1936 and 1937, causing some food and fodder shortage. This was partly offset by the 1937 potato crop which reached an all-time high record. The latest available figures for the principal crops in thousands of metric tons (not including the Saar Territory) are:

	Rye	Wheat	Barley	Oats	Potatoes	Sugar-Beets	Fodder Beets
1932 . . . . .	8,303	5,003	3,214	6,650	47,016	7,875	34,486
1933 . . . . .	8,727	5,604	3,468	6,952	44,971	8,578	30,716
1934 . . . . .	7,607	4,532	3,203	5,452	49,780	10,394	33,804
1935 . . . . .	7,478	4,607	3,387	5,385	41,015	10,567	34,711
1936 . . . . .	7,386	4,420	3,399	5,918	46,323	12,095	37,826

Owing to Germany's lack of gold and foreign exchange with which to buy raw materials, Hitler established in 1936 the Four-Year Plan. Its purpose is to develop Germany's own resources and

furnish substitutes for goods and raw materials formerly imported. The "Hermann Göring Reich Stock Company for Ore Mining and Iron Smelting" for the mining of low grade iron ore in the Salzgitter district in Central Germany near Hanover is expected to produce a million tons of crude steel by 1940 when the plant is completed. Synthetic gasoline, rubber, soap, textiles partly of wood products, and other substitute (*Ersatz*) products are already being successfully developed, but at a high cost; they demand much labour and invested capital furnished in part by the State, and threaten the ultimate exhaustion of Germany's forest and mineral resources. Germany's principal mineral and manufactured products were as follows in metric tons:

	1933	1934	1935	1936
Coal . . . . .	109,532,600	125,405,600	143,491,300	159,756,600
Lignite . . . . .	126,756,600	137,223,400	147,162,100	161,426,900
Iron Ore . . . . .	1,075,200	1,805,400	2,508,300	2,601,100
Lead . . . . .	91,000	98,400	101,500	101,100
Zinc . . . . .	162,000	212,800	205,000	207,700
Rock salt . . . . .	1,841,300	2,024,200	2,077,200	2,383,800
Potash . . . . .	7,362,800	9,616,700	11,672,500	11,764,600
Pig Iron . . . . .	5,246,500	8,716,700	12,846,200	15,502,500
Steel . . . . .	7,393,200	11,601,700	16,013,500	18,590,900

**Banking and Finance.**—No exact statement can be made in regard to the German Government's revenues and expenditures, as the budget has not been published since 1934. The taxes by the Central Government have more than doubled since Hitler came to power, being about 6,000,000,000 marks for 1932-33, 11,500,000,000 for the fiscal year ending March 31, 1937, and estimated at more than 14,000,000,000 for the year ending March 31, 1938. This does not include taxes of about 4,000,000,000 marks levied by the Lands and local communities (*Gemeinde*). The exact debt is also unknown, because the large amounts of treasury bills issued to build armaments, auto highways, and other public works, and to provide for the unemployed, are not counted in the debt until they fall due. Between 1935 and Jan. 1938, the Government publicly increased the Reich debt by issuing eight long-term loans totalling over 7,000,000,000 marks, in order to take care of the treasury bills as they fell due and to consolidate the short-term indebtedness. These loans all bore 4½% interest, were issued at 98½, and were quoted in Jan. 1938 at a fraction above the issue price. They do not include a 500,000,000-mark loan issued by the State Railway (*Reichsbahn*) in 1936, nor loans by other Government enterprises. The total debt of the Reich in Jan. 1938 was conservatively estimated at more than 50,000,000,000 marks or \$20,000,000,000—approximately the same per capita debt as in the U.S. on the same date.

The Reichsbank's gold and foreign exchange reserves, which were about 4,000,000,000 marks in 1932, had shrunk to 75,000,000 at the end of 1937, and afforded only a 1.6% coverage for paper money, as compared with 24.7% in 1932 and with the 40% which before the World War was considered the lowest coverage compatible with safety. The standard of currency is the German mark, equivalent in U.S. money to 40.3325 cents. Owing to the Government's rigid control, its official exchange value is kept very close to its American and foreign equivalent.

**Education and Religion.**—Education has gone through a drastic reorganization under Nazi rule. The period of school attendance was shortened by one year in 1937. Many new schools have been established for giving a year or two of professional or technical training; for many students this will replace the last years at the regular schools or at universities and the older technical institutes (*Hochschule*). Many schools have also been established for training "leaders" for the Nazi Party and for government positions; emphasis in them is placed on comradeship, sports, Nazi ideology, and leadership.

Attendance at Germany's 24 universities has been considerably cut down since the Nazi Revolution, partly owing to Govern-



## GERSHWIN, GEORGE—GIBRALTAR

ment restrictions upon attendance, partly owing to the decline in the quality of teaching as a result of the dismissal or resignation of Jewish and liberal professors, and partly owing to other causes. The Government tends to shift students from the large city universities to the smaller town universities, especially those in Eastern Germany, where Nazi influence is stronger. Thus, the figures for attendance in the winter semester of 1929-30, and the limiting quotas fixed by Bernhard Rust, the Reich minister of Education, for the winter semester of 1937-38, were for the larger universities respectively: Berlin, 16,149, 6,000; Cologne, 11,162, 2,400; Frankfurt, 5,242, 1,700; Hamburg, 3,995, 1,700; Munich, 9,028, 4,800.

The Evangelical Protestants and the Roman Catholics, whose numbers and distribution are given in the table on p. 290, have suffered what they regard as severe persecution under the Nazi régime. The Protestant regional churches took steps in 1933 to form a single Reich Church in accord with Hitler's general policy of centralization. But aggressive Nazis, who ordinarily seldom attended church and who indulged in semi-pagan views, mobilized their efforts to secure the election of Ludwig Müller as Reich bishop of the new church. This caused a split, which has grown deeper and deeper, between the official Evangelical Church and the really devout Christian Opposition pastors and their followers led by Dr. Martin Niemöller (*q.v.*). After futile attempts at compromise, Protestant Church affairs were placed in charge of Hanns Kerrl, who in 1937 forbade Opposition pastors to take collections of money and allowed scores of them to be arrested by the secret police.

Pope Pius XI signed with Hitler in 1933 a Concordat guaranteeing to the Roman Catholics the free exercise of their religion, their religious schools, and their various religious youth, professional and charitable organizations. The guarantees have not been observed. The pope and the German bishops have denounced the Nazi persecution, and a considerable part of the Catholic priests are anti-Nazi. In Nov. and Dec. 1937, Minister Kerrl made speeches intimating that the Government was likely to withdraw its financial support from the Protestant Opposition group and from the Catholics.

**Army and Navy.**—By the Treaty of Versailles Germany was deprived of the greater part of her armaments, forbidden to have heavy aggressive weapons in the future, and limited in her army to a defensive force (*Reichswehr*) of 100,000 men enlisted for 12 years. On March 16, 1935, Hitler suddenly brushed aside all these limitations and announced that Germany would have an army based on the pre-War principle of universal military service. The term of service was at first fixed at one year, but in Aug. 1936, was extended to two years, giving Germany an army of something over 700,000 men. It is equipped with all types of the most modern weapons. The military air-force, built up by Göring, was estimated at the end of 1937 to include 2,500 military planes and 10,000 trained pilots.

The limitation of the German navy to six 10,000-ton battleships and certain smaller craft, was also scrapped by Hitler in June 1935, and replaced by an Anglo-German Naval Agreement severely limiting the German fleet to 35% (45% for submarines) of the British. Germany's naval tonnage at the end of 1937 was stated by *Weyer's Naval Handbook* to be 134,339 tons, and her building program to provide for bringing this tonnage up to 438,000 tons, by the construction of two 35,000-ton and two 26,000-ton battleships, two 19,250-ton aeroplane carriers, five 10,000-ton cruisers, and a considerable number of smaller vessels, including twenty-five submarines. (See also ANTI-SEMITISM; ARMIES OF THE WORLD; BROWN SHIRTS; GOEBBELS, JOSEF; GÖRING, HERMANN WILHELM; HITLER, ADOLF; ROMAN CATHOLIC CHURCH: Germany; WATER POWER.)



Left to right, DER FÜHRER, ADOLF HITLER, chancellor and president; Hermann Göring, minister for aviation; Dr. Josef Goebbels, minister for national enlightenment and propaganda

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## Gershwin, George

(1898-1937), American composer, who was best known for his musical satire,

*Of Thee I Sing* (1931), and his concert piece, *Rhapsody in Blue* (1923). He was born in Brooklyn, Sept. 26, 1898, and, after studying with Charles Hambitzer, Ernest Hutchinson, Edward Kilenyi, and Rubin Goldmark, served his apprenticeship in Tin Pan Alley. In 1920 began his long series of successful musical comedies—*George White's Scandals*, *Lady Be Good*, *Tip Toes*, *Song of the Flame*, *Girl Crazy*, *Of Thee I Sing*, *Let 'Em Eat Cake*, and others. Among his more recent works were *An American in Paris*, a piece for symphony orchestras, and *Porgy and Bess*, a collaboration with his brother and DuBose Heyward. He died in Hollywood, July 11, 1937, just as he was preparing to enter the field of composing for the motion pictures.

## Gibraltar

a rocky headland connected by an isthmus with the Spanish mainland almost at its southern extremity, commanding the inlet to the Mediterranean, and less than 15 mi. from Africa; since 1704 a British possession and Crown Colony; area, 1,200 ac.; pop. (census 1931) 21,372, including 17,613 civilians; est. 1936 (civil only) 15,900, mostly, so far as concerns the civilians, of Spanish descent.

**History.**—The governor and commander-in-chief, His Excellency General Sir Charles Harington, G.C.B., G.B.E., D.S.O., is assisted by a small Executive Council, including three unofficial members.

The civil war in Spain having caused a number of refugees and others to settle in Gibraltar, the Government in May 1937 called attention to the consequent overcrowding and the danger of an epidemic, and offered to arrange for the transport to a Spanish port of such Spaniards as feared that their lives would be in peril if they re-crossed the frontier. It was announced that, if advantage were not taken of this offer, permits of residence would be reviewed and reduced in number. Later in the year questions were asked in the British Parliament relative to an allegation that Gen. Franco had, with the help of German experts, placed guns on the part of Spanish territory occupied by him which commanded the fortifications of Gibraltar; but the Government denied the allegation, and the matter dropped.

**Finance.**—The revenue of the Colony in 1936 was £211,500 and its expenditure £180,000; the revenue is mainly from customs,



Crown rents, fees, and port dues. The trade is mainly transit trade, and industries are all but non-existent. Banking is carried on by five private establishments. About 11 million tons of shipping enter the port yearly, and tourist traffic is rapidly increasing. British currency is in use; the local government issues its own currency notes. Spanish money, however, is also in circulation.

**Education and Religion.**—The non-military population are mostly Roman Catholic, and both the Catholic and the Anglican churches received a small Government subsidy. Elementary education, which is compulsory, is carried on in 13 schools, 11 of them Catholic; the average attendance in 1935-36 was 2,347. There are also four secondary schools.

**Defence.**—There is a large Admiralty harbour, and it is as a naval and military station that Gibraltar is of fundamental importance to the British Empire. About 2,700 British troops are stationed on the rock.

**Gifted Children.** Men are not created equal in intelligence. The gamut comprises: Idiot, imbecile, moron, backward, normal or average, superior (I.Q. 110-120), very superior (120-140) and near genius or genius (140 and above). The term Gifted Children is a bit confusing because formerly—and still to many people—it connoted children with some special gift, such as a gift in music, a gift for painting, or the like. As now used it is equivalent to "exceptionally intelligent." There is still uncertainty as to how many groups should be included in the "gifted" group. Genius and very superior, surely; but superior is very doubtful. The two include 6% of school children, and if we include superior it becomes 20%.

In the home, the exceptionally intelligent child is apt to be more or less of a problem. First, he is not understood and is apt to be treated as of an intelligence below his actual level. This annoys him and leads to maladjustment. Second, his emotional life does not, as a rule, keep pace with his intelligence. For example, a child of four might have the intelligence of the average child of six; but his emotional reactions would still be those of a child of four. This is confusing to parents and teachers. In school, these children do their work in half the usual time and then learn to be lazy or get into mischief. The best solution of this appears to be the special class with an "enriched" curriculum. Cleveland and Los Angeles have had such classes for 17 year olds with marked success. (H. H. Go.)

**Gift Tax.** The gift tax is a tax on the transfer of property during the life of an individual. It is not an entirely new tax, because such a tax was imposed in the United States in 1924 for the purpose of preventing a complete escape from payment of estate taxes through the simple expedient of giving away one's property while the owner was still alive. The tax raised comparatively little revenue and did not prevent escape from the estate tax. In 1926 it was abolished.

By 1932 the need for new revenues had become greater than in 1926; and a gift tax was enacted without debate in Congress. It seeks to impose a tax on gifts which are somewhat commensurate with the estate taxes on transfers by death. The basic law governing gifts today is this 1932 law; and the rates now in effect date from 1935. They are not as high as the estate tax rates. For example, the highest tax rate to which any part of an estate is subject is 70%. In the case of the gift tax the maximum rate is 52½%. While the gift tax rates are not high enough to destroy the incentive to divide one's estate during one's life, they are sufficiently high to raise substantial revenue. With the rapid increase in public expenditures which are still with us, it is more than probable that the gift tax will remain at least as high as it is

## GIFTED CHILDREN—GIRL SCOUTS

at present and in all likelihood will witness some increase in the future. There is every reason also to assume that it will remain a part of our fiscal system as long as the high rates levied on estates continue in effect. As a practical matter, these gift tax rates are enough lower than the estate tax rates where large sums are involved to make the transfer by gift an incentive. For this reason the yield of this tax may be expected to increase materially. (See also TAXATION.) (D. F.)

**Gilbert and Ellice Islands Colony:** see PACIFIC ISLANDS BRITISH.

**Gillette, William Hooker** (1855-1937), American actor and playwright who gained his chief fame in the title rôle of his play, *Sherlock Holmes*. He revived this play during 1929-30 and made his last Broadway appearance in a 1936 revival of *Three Wise Fools*. He died in Hartford, Conn., April 29, 1937. The *Encyclopædia Britannica*, vol. 10, p. 354, contains an account of his career.

**Ginger:** see SPICES.

**Girl Scouts,** a voluntary leisure-time organization in the United States for girls from seven to eighteen years old. Its program offers activities in the fields of homemaking, nature, out-of-doors, community life, international friendship, dramatics and literature, arts and crafts, music and dancing, health and safety, sports and games. It is adapted to girls of various ages: the Brownie program is for girls from seven to ten years old; the Girl Scout program for girls from ten to 14 years old; and the Senior Girl Scout program for girls from 14 to 18 years old. At the end of 1937 there were a total of 441,964 Girl Scouts in the United States. Girl Scouts, Inc. (the official title of the organization) is a member of the World Association of Girl Guides and Girl Scouts which has headquarters in London, England. Thirty-two countries are members of the World Association. At the end of 1935 the world membership numbered about a million and a half.

Lord Baden-Powell, founder of the Scout movement for boys and girls, founded the Girl Guides in England in 1909. The membership of the Girl Guides of Great Britain was 577,996 at the end of 1935. In 1912 Juliette Low (Mrs. William Low) brought



GIRL SCOUTS of the United States at encampment in celebration of the organization's twenty-fifth anniversary



the idea of the movement to the United States, where it was called Girl Scouting. In 1937 the Girl Scouts of the United States celebrated their Silver Jubilee at an international camp which was attended by representatives of 26 nations. Other international gatherings are held from time to time and a permanent international meeting place is maintained: "Our Chalet" at Adelboden, Switzerland.

**Gladioli:** see HORTICULTURE: *Gladioli*.

**Glands and Hormones:** see ENDOCRINOLOGY.

**Glasgow,** the largest city in Scotland and second largest in Great Britain, disputes with Sydney the title of second largest city of the British Commonwealth. Covering an area of 30,040 ac., it had at the 1931 census a population of 1,088,524, estimated to have increased to 1,124,300 in 1936. The city is situated on the river Clyde, one of the world's greatest commercial highways; in 1936-37 the port was entered by 7,582,000 tons of shipping, and 7,550,000 tons were cleared. At the end of December, a board of inquiry into the supply and regulation of casual labour about the Glasgow docks issued its report, recommending various measures to check abuses that had arisen regarding claims for unemployment pay.

The city is a great shipbuilding centre, and manufactures iron and steel goods, chemicals, textiles, and tobacco. Its university on Oct. 23 elected the first Pacifist Lord Rector of any British university, Canon H. R. L. Sheppard who defeated Scottish Nationalist, Unionist, and "United Front" candidates, including Mr. Winston Churchill, but died a few days after his election. On July 9, Glasgow received a visit from the King and Queen, the first since their accession. A strike of shipyard apprentices on Clydeside in March and April lasted five weeks, and on April 16 a sympathetic one-day strike took place which involved 100,000 workers. A strike of 1,500 men also occurred in an armament works at Parkhead, lasting seven weeks.

The main interest of Glasgow in 1937, however, concerned the Empire Exhibition which is to be held at Bellahouston park, opening in May 1938. Work began in February, about 10,000 men being employed in the preparation of the necessary buildings, which are to include an observation tower 300 ft. in height; the total cost of the Exhibition is expected to reach £10 millions. The site was inspected by King George at his visit in July. Considerable discussion took place on the question of the supply of alcoholic refreshments at the Exhibition, which is being held in a "dry" area; but the promoters succeeded in obtaining an order letting aside, for the period of the Exhibition and within its grounds, the prohibition of the sale of liquor.

**Glass.** Outstanding developments in glass manufacturing in 1937 have been: cooking utensils of toughened glass for use over flames; improved glass wool and fibre, and fabrication of glass ropes, yarns, and fabrics for many purposes; cellular glass (in Europe), formed by generating bubbles in masses of glass to produce light building material of high insulating value. The practice of lettering and labeling bottles with fired-on coloured enamels increased in popularity.

Production, in both America and Great Britain, showed a marked increase over 1935, the last year whose census figures are available. The British glass industry in 1935, used 530,000 tons of sand, employed 45,000 persons, and made ware valued at \$5,000,000. The American glass industry used 2,300,000 tons of sand, employed 67,000 persons, and the value of ware made was \$84,000,000. In both countries, bottles and jars make up about one-third the production value, with plate glass in second position. The comparatively lower number of employees and lower price

per unit weight in American production are explained by more mechanization.

Technologists were interested in the twenty-first anniversary of the Society of Glass Technology, whose journal, edited by Prof. W. E. S. Turner of Sheffield, is the most important record in English of glass research. Investigations in 1937 were largely directed at the elusive problem of constitution of glass. Co-ordinated efforts, arranged internationally through the Congress on Glass, were planned to determine values for the physical properties of glass as an engineering material. (See also ARCHITECTURE: *Materials*; FELDSPAR; FLUORSAPAR; GYPSUM.) (S. R. S.)

**Glass Brick:** see ARCHITECTURE: *Materials*; BUILDING AND BUILDING INDUSTRY: *Great Britain*.

**Gleaves, Albert** (1858-1937), American naval officer who as commander of the cruiser and transport force during the World War was responsible for taking about 1,000,000 United States troops safely to France. How this task was accomplished he described in *The History of the Cruiser and Transport Force* (1921). Following the war, he was awarded distinguished service medals by the army and navy. Born in Nashville, Tenn., Jan. 1, 1858, Admiral Gleaves attended the U.S. Naval Academy and after being commissioned an ensign in 1881 was promoted through all the grades until, on his appointment as Rear Admiral in 1915, he became commander of the destroyer squadron of the Atlantic Fleet. After the entry of the United States into the World War he was designated commander of convoy operations in the Atlantic. In 1918, he became vice admiral and in 1919 full admiral, in command of the Asiatic Fleet. After acting as commandant of the Boston navy yard he retired in 1922.

He died at Haverford, Pa., Jan. 6, 1937.

**Gleichen, Lord Edward** (1863-1937), British major-general; born in London, Jan. 15. For a biographical note, see *Encyclopædia Britannica*, vol. 10, p. 425. He retired from the army in Oct. 1919. His honours included the D.S.O. (1900), C.M.G. (1898), C.B. (1906) and K.C.V.O. (1909). He died in London, Dec. 14, 1937.

**Gliders.** The art of motorless flight made considerable progress during 1937. The greatest advance was made in Europe where the leading nations have subsidized the sport as a means of training pilots, but steady headway is also being made in the United States.

Largely because of this stimulation in Europe, performance records have risen steadily. The two-year distance record of 313 mi. was broken in Russia by Victor Rastorgoueff, whose remarkable flight of 405 mi. now stands as the world record. The women's record, a goal flight made in Germany, is now 218 miles. Through improvement in instrument-soaring technique in clouds, the Germans have raised the altitude record to 19,685 feet. They also hold the record for duration, 40 hours, 55 min. The American records have not been bettered, but progress has been made. During the Eighth Annual National Soaring Contest at Elmira, N.Y., a total of 2,224 mi. were flown cross country, twice the best figure of any previous year.

There are now more than 100 clubs affiliated with the Soaring Society of America. There is every indication that America is on the way to take its place in motorless aviation even without any Government subsidy. (L. D. B.)

**Glucose:** see CHEMISTRY, APPLIED.

**G-Men:** see FEDERAL BUREAU OF INVESTIGATION.



**Goebbels, Josef** (1897— ), German politician, born Oct. 29, 1897, at Rheydt in the Rhineland; studied at Bonn and several other German universities and took the degree of Ph.D. at Heidelberg in 1920. Active as a newspaper writer in the Rhineland, he became District Leader (*Gauleiter*) of the Nazi party in Berlin in 1926, and built up the party membership and organization in North Germany while Hitler was building it up in South Germany. He founded in 1927 and has edited ever since the party newspaper, *The Attack* (*Der Angriff*). In 1929 he was appointed Reich party propaganda leader, and in 1933, after Hitler assumed power, Reich Cabinet minister for propaganda and enlightenment and president of the Reich culture chamber with control over the press, radio and other cultural activities. He has been a member of the Reichstag since 1928. He is the author of many works of which the best known are: *Die zweite Revolution*, *Michael, Nazi Sozi*, *Kampf um Berlin*, *Rassenfrage und Weltpropaganda*, *Vom Kaiserhof zur Reichskanzlei*. (See GERMANY; NATIONAL SOCIALISM.) (S. B. F.)

**Goering, Hermann Wilhelm:** see GÖRING, HERMANN WILHELM.

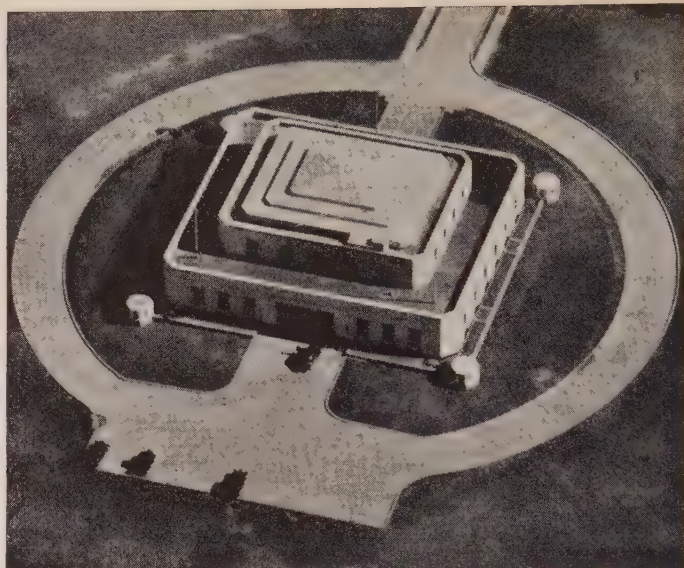
**Gold.** Under the stimulus of the high currency price, the world production of gold continued to increase in 1937, though not so rapidly as in the previous year. The approximate output may be estimated at 35,500,000 fine ounces, compared with 32,960,000 in 1936 and 29,554,000 in 1935.

South Africa was still by far the largest producer, her output having been approximately 11,740,000 fine ounces, as against 11,336,000 in 1936 and 10,774,000 in 1935. Her production in 1937—obtained from crushing about 51,000,000 tons of ore, as against 48,600,000 tons in 1936—would have been still larger but for a reduction in the grade of ore milled, which averaged 4.46dwt. of fine gold, compared with 4.57dwt. in 1936 and 4.73dwt. in 1935. The policy of lowering the grade has been progressively pursued since the rise in the price of gold following abandonment of the gold standard by South Africa at the end of 1932, the object being to prolong the life of the mines and lessen the incidence of taxation.

It seemed at one time last year that this policy would have to be reversed because of the prospect of a sharp increase in working costs and a fall in the price of gold. Actually, however, working costs were only slightly higher and the average price slightly less than in 1936. The declared estimated working profit amounted to close on £31,700,000 (12s. 5d. per ton of ore milled), compared with £32,054,000 (13s. 2d. per ton of ore milled) for 1936. Dividends amounted to £17,071,000, against £17,296,000, all but a small proportion of the balance being payable to the Union Government in the form of taxation and royalties.

The proved payable ore reserves of the producing mines of the Rand are sufficient to ensure many more years of profitable production on last year's scale—provided of course that there is no very adverse movement in costs or in the value of gold. This satisfactory position is due partly to active development and exploration, and partly to the sharp rise in the price of gold since 1932, which has brought within the zone of payability vast quantities of ore previously classed as unpayable. The cost of developing ore on the producing mines has been financed almost entirely out of profits, as also has been a considerable proportion of the capital expenditure required for extensions to milling capacity, shaft sinking, etc.—which expenditure has been estimated to have exceeded £20,000,000 over the past five years.

Russia, whose output has expanded rapidly in recent years, ranks next to South Africa as a gold producer. Reliable estimates for that country are difficult to obtain—but competent authorities



UNITED STATES' new gold depository in a military reservation at Fort Knox, Kentucky, far from the seacoast and international boundaries

outside the Union place the Soviet's output for 1937 at not less than 6,000,000 fine ounces, compared with 5,400,000 in 1936. There is little reason to doubt that under more efficient management output could be still more rapidly increased, the more so as the bulk of the production in the Soviet Union is obtained by dredging and the rest by mining at shallow depths, which obviates heavy capital expenditure.

The United States held third place with an output of 4,089,000 fine ounces, against 3,714,000 in 1936, the Alaskan mines again providing a large proportion of the total. Canada followed close with an estimated output of 4,055,000 fine ounces, compared with 3,748,000 in 1936. The largest producing provinces were Ontario (approximately 64%), Quebec (17%), and British Columbia (12%).

Next in importance was Australia, whose production rose from 1,160,000 fine ounces in 1936 to 1,366,000 last year, though in certain directions there was evidence of serious impoverishment of ore bodies, suggesting that the rate of expansion may not be maintained in future years.

Most other gold-producing countries also increased their output, the progress made by the Gold Coast and the Philippines being particularly noteworthy. (See also FEDERAL RESERVE SYSTEM; GOLD RESERVES AND GOLD STANDARD; METALLURGY; PURCHASING POWER OF MONEY.) (P. F.)

**Golden Gate Bridge:** see BRIDGES; CALIFORNIA: *History*; SAN FRANCISCO.

**Gold Reserves and Gold Standard.** A nation's gold reserves are more accurately defined as its monetary gold reserves—that is, the gold coin in circulation and the gold bullion or specie held by the nation's central bank or other monetary authority. A more precise definition would exclude gold coin in circulation, though today the amount of such must be negligible. In normal times it would be fair to limit the definition to the gold held by the central bank as backing for the note circulation and for the deposits held with the central bank by the Government, the commercial banks, and others. This gold in effect forms the basis of the national supply of currency and credit, and as the central bank gains or loses gold, it must begin to consider measures for enlarging or contracting the supply of credit. Since 1931, however, the gold reserves of many coun-



tries, including England, France, and the United States, are held partly by the central bank and partly by the Exchange Equalization Account (*see* EXCHANGE EQUALIZATION FUNDS). The latter gold does not lie at the basis of the national supply of currency and credit, and variations in the amount of Exchange Account gold do not affect the internal supply of credit.

The importance of an adequate gold reserve is twofold. First, gold is the only medium in which foreign debts can be paid with certainty, because no foreign creditor can be forced to accept a country's paper currency, or bills or cheques drawn therein. Next, gold is the only basis of currency and credit in which people all the world over believe, and so it is the only guarantee of confidence. In England, it is true, people believe implicitly in the pound, although since 1931 it has been impossible to change it into gold except with the consent of the authorities. On the continent of Europe the belief in gold persists.

If a currency is ultimately changeable into gold at the public's behest and at a fixed rate of so many units of currency per ounce of gold, then a country is said to be on the gold standard. There are three forms of gold standard:

(a) The full gold standard: gold coins circulate, and the central bank is bound to redeem its notes on demand at a fixed rate. The central bank must also buy and sell gold in any quantities at fixed prices.

(b) The gold bullion standard: gold coins do not circulate. The central bank is only bound to buy and sell gold in bars of 400 ounces. This system was in force in England from 1925 to 1931, during which time a gold bar was worth about £1,700 sterling. The result was that the Bank of England only bought and sold gold in large quantities. This fulfilled the needs of bankers, who had foreign exchange differences to settle, but prevented gold from dribbling into internal circulation.

(c) The gold exchange standard: the central bank was not bound to buy and sell gold, but only to buy and sell bills, cheques, and other instruments drawn in currencies on the full gold or gold bullion standard. This system enjoyed a considerable vogue up to 1931, but the suspension of the gold standard in England gave it its death-blow, the reason being that sterling was a favourite currency for foreign central banks to buy and sell.

The essence of any form of gold standard is:

(1) The central bank must buy and sell gold at a fixed price.  
(2) The amount of notes in circulation and deposits held by the central bank must bear a defined relation to its gold reserves. In many countries the central bank must hold gold up to a given percentage of its notes and deposits; though of course it can and usually does hold gold in excess of that percentage. In England the fiduciary note issue is fixed by the Government, and all other notes must be backed pound for pound by gold.

(3) It follows that as gold enters or leaves the central bank, the supply of credit may have to be expanded or contracted. Thus internal credit conditions are linked up through gold with foreign exchange movements and the balance of trade.

(4) There must be no restrictions upon the importation or exportation of gold.

Since 1931, many countries, including England, have suspended the gold standard. They did so by abrogating the first of the above conditions. One result was a depreciation since 1931 of their currencies in terms of gold, that is, the price of gold rose. Some countries (not England) took the opportunity of writing-up their gold reserves, while the rise in the price of gold has made gold-mining more profitable and so increased the world supply of gold. Hence at a time when most countries are off gold, the world's gold reserves paradoxically enough are larger than ever.

To illustrate this, world gold production was 19.6 million ounces in 1929, 22.4 million ounces in 1932, and 35 million ounces in

1936. The Bank of England's gold reserves, which have not been written-up, have risen from £146 millions in 1929 to £326 millions in Nov. 1937. United States monetary gold stocks (written-up in the ratio of 59.06: 100 in 1934) have risen from \$2,857 millions in 1929 to \$12,804 millions in Nov. 1937. A wider comparison between 1929 and 1936 is shown in the following table:

Monetary Gold Stocks: End of Years

Central Banks of	National Currency	1929	1931	1936	1929	1931	1936
		(Millions of national currency)			(Millions of fine ounces)		
United States	\$	2,857	2,988	11,251*	138	145	322
England . . .	£	146	121	314	34	28	74
France . . .	frs.	41,668	68,481	60,359	79	129	77
Germany . . .	rm.	2,265	985	66	26	11	0.8
Holland . . .	fl.	447	887	720	9	17	14
Belgium . . .	bel.	1,175	2,553	3,736	8	17	21
Switzerland .	s.fr.	581	2,299	2,683	5	21	19
Total . . .		—	—	—	299	368	528

\*Total monetary gold stocks.

While most countries have suspended the gold standard, in practice international differences are still largely settled in gold. The gold so used, however, comes into or goes out of Exchange Accounts, leaving the central banks' gold reserves intact. Hence each country can run its own internal credit policy without having the supply of credit continually upset by changes in the size of its central bank's gold reserves. This was an advantage in 1933-37, when most of the exchange fluctuations and consequent gold movements were due to sudden transfers of capital about the world, and bore no relation to the internal commercial and financial position of a country. Whether it will always be an advantage for a country to divide its gold reserve between its central bank and an exchange account is open to argument, with weighty reasons on both sides. (*See also* AGRICULTURE: *Gold Standard*; EXCHANGE RATES; GOLD.) (N. E. C.)

**Gold Standard:** *see* GOLD RESERVES AND GOLD STANDARD.

**Golf.** The surge of golf interest in America, retarded appreciably during the economic depression, continued on the upbeat throughout 1937 and in many quarters reached a new high in financial structure and competitive brilliance. Club organizations, infused with newly recruited memberships, gave the game a firmer structure and golf exhibited signs of growing pains again, what with the renewed clamour for legislation to restrict the size, weight and number of clubs to be permitted a player, discussion in many circles of the advisability of reconstructing courses to halt the onslaught on par and the proposal to reduce the resilience of golf balls. As the year grew to a close, none save the limitation of clubs had found its way into the rules.

Where a player was permitted unbridled latitude in the number of implements, the United States Golf Association ruled that after Jan. 1, 1938 a competitor would be permitted to carry no more than 14 clubs, the result being no appreciable difference in phenomenal scoring. Ralph Guldahl, a giant Texan, won the United States open championship over the Oakland Hills Country Club course of Detroit, Mich., with a record 72-hole score of 281, eclipsing the 282 scored by defending champion, Tony Manero at Baltusrol, Springfield, N.J., in 1936. Guldahl's victory was accomplished in one of those Garrison finishes for which the open champion has become famous. Sam Snead, a powerful youth from West Virginia, playing for the first time, was



among the early finishers. His total was 283, a score which had been bettered only once in the history of the tournament. Guldahl's final round, enabled him to better Snead's score by a stroke. Snead, in a tour in which professional golfers participate travelling from one locality to another to compete in tournaments sponsored mainly by resorts and chambers of commerce in California, Florida, Texas, Georgia and the Carolinas, became the phenomenon of golf.

His exploits earned him a place on the United States team for the Ryder Cup matches, a biennial competition between picked teams of United States and British professional golfers. The United States team won the Ryder Cup matches on British soil for the first time since their inception. Heretofore the American and British teams always were victorious when playing on home soil.

There was an innovation in the contest for the United States amateur championship. For the first time in the 41 years since its inception, it was contested on a course in the Pacific North-west. Alderwood Country Club of Portland, Ore., was the scene and John Goodman of Omaha, Neb., won the title when he defeated Ray Billows, Poughkeepsie, N.Y., 2 up in a 36-hole final. Goodman became the fifth player in the history of American golf to win both the open and amateur championships. Goodman won the United States open title in 1933. Others to win both the open and amateur championships were Robert Tyre Jones, Jr., Charles Evans, Francis Ouimet and Jerome D. Travers.

The international flavour which spiced the 1936 United States women's championship was missing this year when illness prevented Miss Pamela Barton of Great Britain from defending the laurels she won at Canoe Brook, Summit, N.J., in 1936. The 1937 championship was contested at Memphis, Tenn., and the victor was Mrs. Estelle Lawson Page of Chapel Hill, N.C., who defeated Miss Patty Berg, Minneapolis, Minn., 7 and 6 in the 36-hole final. Mrs. Page, a Phi Beta Kappa graduate from the University of North Carolina, played remarkable golf. She was seven strokes over par for 129 holes. She won the medal with a 78 and was the only player in the field to score better than 80, duplicating her qualifying feat of 1936.

Although a victory in the Canadian open championship was his only national tournament victory in a decade of brilliant golf, Harry Cooper continued to lead professionals of the United States in average scoring. Cooper maintained an average of less than 72 strokes per round in 25 tournaments, winning the Harry Vardon Memorial trophy presented by the Professional Golfers Association of America. Last year Cooper lost this distinction by a fraction of a stroke to Guldahl. Cooper's prize winnings for the year reflected the return of golfing prosperity. He won over \$13,000 in cash, more than double the amount collected two years ago by Paul Runyan, the season's leading money winner. Byron Nelson, Reading, Pa., scored two important victories during the year, beating Guldahl by a whirlwind finish in the Masters' tournament at Augusta, Ga., an event sponsored by Robert T. Jones, and defeating Henry Picard in the finals of the \$12,000 Belmont, Mass., open, richest professional tournament in America. In late season links invasions of Central and South America, players from the United States won three titles. Picard won the open title of the Argentine; Goodman defended successfully the Mexican amateur title he won in 1936, and Mrs. Dan Chandler, Dallas, Texas, won the Women's Mexican championship. Youthful players from all sections of the country burst into prominence in sectional, State and national events, accentuating the difficulty of established satellites who had grown accustomed to dominating the field. (T. HU.)

**Great Britain and Europe.**—The Royal and Ancient Golf Club of St. Andrews, like most governing bodies in sport, moves slowly, and it was therefore a matter of some moment in the golf-

ing world when, during the past year, it decided to alter its constitution. The club now has one main committee of 16 members, a quarter of whom must retire in rotation each year. This committee is responsible for choosing all the sub-committees, who in their turn have the power to co-opt a limited number of outside members who are not actually members of the club.

This move had the appearance of making the government of the game more democratic, and gave general satisfaction.

Despite the usual rumours, no change was made in the specification of the golf-ball, though the new committee at once had the matter under their active consideration.

The open championship, played on the "marathon" course at Carnoustie, became virtually the championship of the world on account of the presence of the entire American Ryder Cup team. It was won in brilliant fashion by Henry Cotton (Ashridge, Herts), whose final round of 71 in blinding rain was reckoned one of the finest achievements in golf history.

Reginald Whitcombe, another Englishman, and Charles Lacey, brother of the English professional, but now resident in the United States, were second and third.

The United States won the Ryder Cup at Southport by three matches, but Cotton, following his Carnoustie triumph, beat Densmore Shute, American match-play champion, by five and four in a 72-hole £500 challenge match at Walton Heath. Over a course measuring more than 7,000 yds., Cotton's score was ten below an average of fours.

C. A. Whitcombe won the new Harry Vardon Memorial Trophy with a season's average of 71.64 per round.

In amateur golf, Robert Sweeny, a young American player who learned most of his golf in England, proved himself to be Britain's best player by winning the championship at Sandwich. He beat Lionel Munn by three and two in the final.

Miss Jessie Anderson, a youthful Scottish golfer of diminutive stature, won the ladies' championship at Turnberry in most convincing style, beating a fellow-countrywoman, Miss Doris Park, in the final. Both are daughters of professional players.

Coupled with Miss Anderson, Miss Wanda Morgan was the outstanding figure of the year. She won the English ladies' title for the second year in succession at St. Enodoc, Cornwall, and impressed every critic with the easy rhythm of her swing.

Ladies' golf, however, suffered an irreparable loss with the sudden death, at Turnberry, of Miss Bridget Newell. Runner-up to Miss Pamela Barton in the previous year, she also held the distinction of being a qualified barrister and Britain's youngest magistrate.

The results of the national championships were as follows:

**England.**—Amateur, J. J. F. Pennink (Royal Ashdown Forest). Ladies', Miss Wanda Morgan (Rochester and Cobham).

**Scotland.**—Amateur, H. McNally (Ardeer). Ladies', Mrs. A. M. Holm (Troon).

**Ireland.**—Open, Bert Gadd (West Cheshire). Open amateur, J. Fitzsimmons (Bushfoot). Native amateur, J. Bruen (Cork). Native professional, P. J. Mahon (Royal Dublin).

**Wales.**—Amateur, D. H. Lewis (Ashburnham). Ladies', Mrs. Graham Emery.

It is worthy of note that H. McNally, winner of the Scottish native championship, is a miner by trade, and had actually worked a full night shift immediately before winning his way through to the semi-final, a feat of exceptional physical endurance.

The continental championships became increasingly popular with British players, who achieved a fair degree of success. Henry Cotton, on a busman's holiday, won the German and Czechoslovak open championships, starting the tournament at Bad Ems with a 63, which he described as one of the finest rounds of his life.

Harry Bentley (Hesketh) won the German amateur title for the





second time, also at Bad Ems. No fewer than 46 British players went in quest of this title, of which the writer was at the time the holder.

Having beaten France in the international match at Chantilly, many of the English team took part in the French amateur championship at Morfontaine, Paris. It was, however, won by the French native champion, Jacques l'Eglise, who defeated Henry Longhurst by one hole in the 36-hole final.

Miss Kathleen Garnham (The Naze) won the French ladies' title, beating in the final Mrs. Rhodes, of Yorkshire, who in turn won the Belgian ladies' championship. (H. Lo.)

**Goncourt Prize Novel:** see LITERARY PRIZES: French.  
**Gonorrhoea:** see VENEREAL DISEASES.

**Gordon, Charles William** (1860–1937), leading Canadian author and churchman, was born at Indian Lands, Ont., Sept. 13, 1860. Trained for the ministry, his first posts were in Western camps where he gathered materials for books which were to make him famous. After touring Ireland and Scotland in the interest of Canadian missions, he began writing under the name of Ralph Connor. His first book, *Black Rock*, was a best seller. It was his second, *Sky Pilot*, however, which secured his reputation by selling over a million volumes. His church work was also significant; for in addition to serving as pastor of St. Stephen's Church in Winnipeg for thirty years, he played a leading part in social service work, gave outstanding service as a World War chaplain, and was prominent in the movement leading to establishment of the United Church of Canada in 1925. He died Oct. 31, 1937.

**Göring, Hermann Wilhelm** (1893– ), German statesman, born at Rosenheim in Bavaria on Jan. 12, 1893, achieved high distinction during the World War in the Air Force as an "ace" and as Commander of the Richthofen Squadron. After the War he served two years in civil aviation in Sweden where he married Karin von Fock of Stockholm; after her death in 1931 he married Emmy Sonnemann of Hamburg in April, 1935. As a result of participating with Hitler in the abortive Munich Beer Hall Putsch of Nov. 1923, he had to flee to Italy. Returning to Germany in 1927, he became active in the Nazi party and was elected member of the Reichstag (1928– ) and president of the Reichstag (1932– ). When Hitler was appointed Chancellor, Göring had heaped upon himself new tasks and honours in 1933 as Reich Cabinet Minister for Air Forces, Prussian Minister President, Minister of the Interior with charge over the Prussian police, theatres and opera, and General of Infantry. In 1934 his added titles included Master of the Reich Forests and Hunting, and Supreme Commander of the Air Forces. In 1936, as Commissar for the execution of the four-year plan, he gradually assumed supreme direction of the whole industrial life and foreign trade of Germany, and finally in Nov. 1937, superseded Dr. Schacht as economic dictator of Germany. He possesses great energy and driving force, and, unlike many Nazis, is not violently anti-Semitic. In power he stands next to Hitler and is generally regarded as Hitler's probable successor. He is the author of *Aufbruch einer Nation* (1934) and *Der Geist des neuen Staates* (1934). See GERMANY; NATIONAL SOCIALISM; and Erich Gritz-bach, *Hermann Göring, Werk und Mensch* (Munich 1937).

(S. B. F.)

Upper, RALPH GULDAHL of Texas won the open championship on the Oakland Hills, Detroit, golf course

Centre, HENRY COTTON, British open champion of 1937

Lower, JOHNNY GOODMAN, winner of the United States amateur golf championship in 1937



## Government Departments and Bureaus.

The following are the leading officers of the more important Government departments and bureaus of the United States. The date for the information is Jan. 1, 1938.

Department or Bureau	Name	Post
Department of State	Hull, Cordell	Secretary
Department of State	Welles, Sumner	Under-Sec'y
Department of the Treasury	Morgenthau, Henry, Jr.	Secretary
Department of the Treasury	Magill, Roswell	Under-Sec'y
Comptroller of the Currency	O'Connor, J. F. T.	Comptroller
Treasurer of the U. S.	Julian, William A.	Treasurer
Bureau of Customs	Moyle, James H.	Commissioner
Bureau of Internal Revenue	Helvering, Guy T.	Commissioner
Bureau of Public Health	Parran, Thomas, Jr.	Surgeon Gen.
Federal Alcohol Administration	Alexander, W. S.	Administrator
The Coast Guard	Waesche, Russell R.	Commandant
Bureau of the Budget	Bell, Daniel W.	Director
Department of War	Woodring, Harry H.	Secretary
Department of War	Johnson, Louis A.	Asst. Sec.
Chief of Staff	Craig, Malin	Chief of Staff
Adjutant General	Conley, Edgar T.	Adj. General
Chief of Engineers	Schley, Julian L.	Chief
Chief of the Air Corps	Westover, Oscar	Chief
Department of Justice	Cummings, Homer S.	Att'y-Gen.
Solicitor General	Reed, Stanley F.	Solic. Gen.
Federal Bureau of Investigation	Hoover, J. Edgar	Director
Bureau of Prisons	Bennett, James V.	Director
Post Office Department	Farley, James A.	Post. Gen.
Department of the Navy	Swanson, Claude A.	Secretary
Department of the Navy	Edison, Charles	Asst. Sec.
Office of Naval Operations	Leahy, William D.	Chief
Bureau of Navigation	Andrews, Adolphus	Chief
General Board	Hart, Thomas C.	Chairman
Marine Corps	Holcomb, Thomas	Commandant
Department of the Interior	Ickes, Harold L.	Secretary
Department of the Interior	West, Harold	Under-Sec'y
General Land Office	Johnson, Fred W.	Commissioner
Office of Indian Affairs	Collier, John	Commissioner
Office of Education	Studebaker, John W.	Commissioner
Geological Survey	Mendenhall, W. C.	Director
Bureau of Reclamation	Page, John C.	Commissioner
National Park Service	Cammerer, Arno B.	Director
Bureau of Mines	Finch, John W.	Director
Department of Agriculture	Wallace, Henry A.	Secretary
Department of Agriculture	Wilson, M. L.	Under-Sec'y
Agricultural Adjustment Administration	Tolley, Howard R.	Administrator
Bureau of Agricultural Economics	Black, Albert G.	Chief
Bureau of Animal Industry	Mohler, John R.	Chief
Bureau of Biological Survey	Gabrielson, Ira N.	Chief
Bureau of Chemistry and Soils	Knight, Henry G.	Chief
Bureau of Entomology	Strong, Lee A.	Chief
Food and Drug Administration	Campbell, Walter G.	Chief
Forest Service	Silcox, Ferdinand A.	Chief
Bureau of Home Economics	Stanley, Louise	Chief
Bureau of Plant Industry	Richey, Frederick D.	Chief
Bureau of Public Roads	MacDonald, Thomas H.	Chief
Soil Conservation Service	Bennett, Hugh H.	Chief
Weather Bureau	Gregg, Willis R.	Chief
Department of Commerce	Roper, Daniel C.	Secretary
Bureau of Air Commerce	Fagg, Fred O., Jr.	Director
Bureau of the Census	Austin, William L.	Director
Bureau of Foreign and Domestic Commerce	Dye, Alexander V.	Director
National Bureau of Standards	Briggs, Lyman J.	Director
Bureau of Fisheries	Bell, Frank T.	Commissioner
Coast and Geodetic Survey	Vacancy	Director
Bureau of Marine Inspection and Navigation	Field, R. S.	Director
Patent Office	Coe, Conway P.	Commissioner
Department of Labor	Perkins, Frances	Secretary
Department of Labor	Vacancy	Asst. Sec'y
United States Conciliation Service	Kerwin, Hugh L.	Director
Bureau of Labor Statistics	Lubin, Isador	Commissioner
Immigration and Naturalization Service	Houghteling, James L.	Commissioner
Children's Bureau	Lenroot, Katharine F.	Chief
Women's Bureau	Anderson, Mary	Director
Independent Offices		
Civil Service Commission	Mitchell, Harry B.	President
Inter-State Commerce Commission	Splawn, Walter M. W.	Chairman
Federal Reserve Board	Eccles, Marriner S.	Chairman
Federal Trade Commission	Ayres, William A.	Chairman
United States Tariff Commission	Stevens, Raymond B.	Chairman
United States Board of Tax Appeals	Black, Eugene	Chairman
Federal Power Commission	Manly, Basil	Chairman
Federal Housing Administration	McDonald, Stewart	Administrator
Veterans' Administration	Hines, Gen. Frank T.	Administrator
Smithsonian Institution	Abbott, C. G.	Secretary
Pan American Union	Rowe, L. S.	Director
American National Red Cross	Grayson, Cary T.	Chairman
Reconstruction Finance Corporation	Jones, Jesse H.	Chairman

Department or Bureau	Name	Post
Federal Home Loan Bank Board	Fahey, John H.	Chairman
Tennessee Valley Authority	Morgan, Arthur E.	Chairman
Rural Electrification Administration	Carmody, John M.	Administrator
National Youth Administration	Williams, Aubrey	Director
Farm Credit Administration	Myers, William I.	Governor
Public Works Administration	Ickes, Harold L.	Administrator
Central Statistical Board	Rice, Stuart A.	Chairman
Federal Emergency Relief Administration	Hopkins, Harry L.	Administrator
Works Progress Administration	Hopkins, Harry L.	Administrator
Emergency Conservation Work	Fechner, Robert	Director
Federal Deposit Insurance Corporation	Crowley, Leo T.	Chairman
Securities and Exchange Commission	Douglas, William O.	Chairman
The National Archives	Connor, R. D. W.	Archivist
National Labor Relations Board	Madden, J. Warren	Chairman
Federal Communications Commission	McNinch, Frank R.	Chairman
Social Security Board	Altmeyer, Arthur J.	Chairman
United States Maritime Commission	Vacancy	Chairman
United States Housing Authority	Straus, Nathan	Administrator

**Great Britain.**—The following are the ministers, permanent under-secretaries, etc., of the more important of the Government departments of Great Britain:

Department or Bureau	Name	Post
Admiralty, The Board of	A. Duff Cooper	First Lord
	Sir R. H. Archibald Carter	Permanent Secretary
Agriculture and Fisheries	W. S. Morrison	Minister
	Sir Donald Fergusson	Permanent Secretary
Air Ministry	Viscount Swinton	Secretary of State
	Col. Sir Donald Banks	Secretary
Burma Office: see India Office		
Cabinet Office	Col. Sir Maurice Hankey	Secretary
Civil Service Commission	Sir Roderick Meiklejohn	1st Commissioner
Colonial Office	W. Ormsby Gore	Secretary of State
	Sir Cosmo Parkinson	Perm't Under-sec'y
Crown Agents for the Colonies	Sir W. F. Gowers	
	H. C. Thornton	
	J. E. W. Flood	
Commissioners of Crown Lands	The Minister of Agriculture and Fisheries ( <i>ex-officio</i> )	Commissioner
	C. L. Stocks	Perm't Commissioner.
Customs and Excise, Board of	Sir G. Evelyn P. Murray	Chairman
Committee of Imperial Defence	The Prime Minister	Chairman
	Sir Thomas Inskip	Deputy Chairman and Minister for Co-ordination of Defence
Dominions Office	Col. Sir Maurice Hankey	Secretary
	Malcolm MacDonald	Secretary of State
	Sir Edward Harding	Perm't Under-sec'y
Duchy of Lancaster	Earl Winterton	Chancellor
	Sir John Bennett	Vice-chancellor
Education, Board of	Earl Stanhope	President
	M. G. Holmes	Permanent Secretary
Foreign Office	Anthony Eden	Secretary of State
	Sir Robert Vansittart	Perm't Under-sec'y
(Appointed, Jan. 1, 1938, Chief Diplomatic Adviser to the Foreign Secretary; succeeded as Permanent Under-secretary by Sir Alexander Cadogan.)		
Health, Ministry of	Sir Kingsley Wood	Minister
	Sir George Chrystal	Secretary
Home Office	Sir Samuel Hoare, Bt.	Secretary of State
	Sir R. R. Scott	Perm't Under-sec'y
India Office	Marquess of Zetland	Secretary of State
	Sir Findlater Stewart	Perm't Under-sec'y
Inland Revenue, Board of	Sir Edward R. Forber	Chairman
Labour, Ministry of	Ernest Brown	Minister
	Sir T. W. Phillips	Secretary
Patent Office	M. F. Lindley	Comptroller-general
Paymaster General's Office	Lord Hutchison of Montrose	Paymaster-general
Pensions, Ministry of	Herwald Ramsbotham	Minister
	Sir Adair Hore	Permanent Secretary
Post Office	Maj. G. C. Tryon	Postmaster-general
	Sir Thomas Gardiner	Director-general
Privy Council Office	Viscount Halifax	Lord President
	Col. Sir Maurice Hankey	Clerk of the Council
Public Record Office	The Master of the Rolls	Keeper of the Records
	C. T. Flower	Secretary
Public Trustee Office	Sir Ernest Fass	Public Trustee
Scottish Office	Walter Elliot	Secretary of State
	Sir Horace P. Hamilton	Under-sec'y of State
Stationery Office, H.M.	Sir William R. Codling	Controller
Trade, Board of	Oliver Stanley	President
	Sir William Brown	Permanent Secretary
Transport, Ministry of	Leslie Burgin	Minister
	L. Browett	Permanent Secretary



Department or Bureau	Name	Post
Treasury . . . . .	Neville Chamberlain	Prime Minister and First Lord
	Sir John Simon	Chancellor of the Exchequer
	Sir Warren Fisher	Permanent Secretary and Head of H.M. Civil Service
War Office . . . . .	Leslie Hore-Belisha	Secretary of State
	Sir Herbert J. Creedy	Perm't Under-sec'y
Works and Public Buildings . . . . .	Sir Philip Sassoon, Bt.	First Commissioner
	Sir Patrick Duff	Secretary

**Government Expenditures.** National budgets, responding to the growing demand for armaments, to expanding government participation in business and agriculture and to further continuance of unemployment relief, were enlarged again in 1937 among most of the principal powers, with few and slight exceptions. Total government expenditures in England in 1937 were £936,000,000, compared to £830,000,000 in 1936. The U.S. Government's expenditures during the fiscal year ending June 30, 1937, were \$8,001,000,000, as against \$8,476,500,000 in 1936. Ordinary governmental expenditures in France were Fr. 52,691,000,000, to which Fr. 14,100,000,000 of extraordinary expenditures were added. Germany has issued no returns of expenditures since March 31, 1935. Gross Reich revenue of Rm. 11,492,000,000 in 1936-37 was insufficient and the government borrowed, but only a part of these loans, Rm. 1,903,000,000, was disclosed.

Disguised or concealed charges, and undisclosed facts make it practically impossible to determine exact government expenditures among many countries, especially the totalitarian states. A further complication is the participation of these countries in business, in which activities considerable sums collected and spent by the government fall outside the budget. Also there is a practice of splitting budgets into "ordinary" and "extraordinary" expenditures, only the "ordinary" being covered by revenues.

Great Britain and the United States, however, disclose government finances in extended detail, which is presented in the following. For the United States the figures represent only the Federal government and do not include expenditures by any of the forty-eight States.

**United States.**—Federal expenditures of \$8,001,200,000 in the fiscal year ending June 30, 1937, were \$2,707,400,000 in excess of revenue receipts for the year, compared to deficits of \$4,360,600,000 in 1936 and \$3,001,800,000 in 1935. Official budgets for the year ending June 30, 1938, estimate expenditures at \$7,408,600,000, with a deficit of \$1,088,100,000, and for the year ending June 30, 1939, expenditures of \$6,869,000,000 and a deficit under a billion (\$949,000,000) for the first time since 1931.

Details of U.S. Government expenditures are shown in the table at the bottom of this page. These include actual expenditures for each fiscal year since and including 1931 and estimates for 1938 and 1939. Expenditures for unemployment relief in 1937 totalled \$2,466,800,000, compared to \$2,342,400,000 in 1936, to \$2,360,900,000 in 1935 and to an estimated \$1,759,000,000 in 1938. Relief expenditures are divided into three divisions, which include those for direct relief, \$184,300,000 for 1937, the smallest amount in this category for any year, as will be seen in the accompanying table. Work relief, however, which is shown in the table as expenditures by the WPA and CWA, reached \$1,896,700,000 in 1937. This the U.S. Treasury Department apparently considers as the peak for work relief expenditures, as the estimate for 1938 is more than a half billion dollars less and for 1939 still lower. Work relief in 1936 cost \$1,264,400,000 and in 1935 it cost only \$11,300,000 as that year the peak of direct relief, \$1,914,100,000 was reached. The Civilian Conservation Corps (CCC) is the third of the three items that make up the unemployment relief account. A comparison of the accompanying table shows the various trends in actual and estimated expenditures such as an increase in future expenditures for flood control, \$71,200,000 to be spent in 1938 as against \$54,600,000 in 1937, while river and harbour improvements have been decreased in favour of the more urgent flood protection.

**Great Britain.**—One of the most striking contrasts between pre-War days and the present time is the enormous growth all over the world in Government expenditure. In England, where the budget is subject to fewer qualifications than is the case in many other countries, this growth of expenditure can be illustrated very simply. See Table II.

Since 1911-13, total expenditure has increased in the ratio of 100 to 570. It has risen from 7.1 to 18.1% of the national income. Even since 1924, it has risen absolutely, though not relatively to the national income.

What are the principal causes of this enormous increase since pre-War days? The first and obvious answer is the World War, which raised the British national debt in five years from £650 to £8,000 millions, which latter figure also represents the size of the national debt today. In consequence, the interest and other annual charges of the national debt have risen from a mere £24 millions in 1911-13 to a peak cost of £357 millions in the middle '20s. Since then cheap money and conversion have reduced them to £224 millions, but they are still larger than the whole of the pre-War budget.

Table I—U. S. Government actual expenditures for each fiscal year ending June 30 from 1931 to 1937, inclusive, and estimates of expenditures in 1938 and 1939  
(In millions of dollars)

	1931	1932	1933	1934	1935	1936	1937	1938	1939
Total Expenditures	3,670.9	4,741.1	4,681.3	6,745.2	6,802.3	8,476.5	8,001.2	7,408.6	6,869.0
Net deficit	481.3	2,735.3	2,601.6	3,629.6	3,001.8	4,360.6	2,707.4	1,088.1	949.6
Direct relief	..	..	359.7	715.8	1,914.1	591.7	184.3	126.8	35.9
WPA and CWA	..	..	8.8	331.9	435.5	486.3	385.8	310.2	230.1
CCC	..	..	..	267.0	317.4	243.0	350.6	1,322.2	1,000.1
Highways	173.8	209.9	178.2	11.1	36.2	48.8	41.2	46.1	41.1
Reclamation	13.9	26.3	25.2	24.8	40.9	49.0	52.3	69.5	60.4
Rivers and harbours, improvement	51.4	55.4	50.5	76.4	132.0	137.8	142.4	81.2	60.0
Flood control	37.8	29.2	39.7	48.1	38.7	52.3	54.6	71.2	63.0
Public buildings	67.6	86.2	105.7	78.7	58.1	71.9	70.3	74.4	33.2
Grants to public bodies including administration	..	..	..	18.8	48.0	233.9	272.0	189.5	153.8
Other public works	59.6	71.7	59.4	87.4	89.6	74.1	89.1	66.2	47.1
Loans (net)	235.4	404.1	911.8	810.5	102.1	*180.8	*307.1	*47.9	68.1
Agricultural adjustment program	..	..	..	290.2	743.7	541.6	515.8	442.5	586.1
Social security	..	..	..	..	..	28.4	447.7	658.7	813.2
Subscriptions to stock and surplus	3.1	62.7	71.9	820.9	156.7	88.9	47.1	45.6	5.1
Railroad retirement	..	..	..	..	..	..	5.5	139.7	119.5
Supplemental items	..	..	..	..	..	..	..	200.1	75.1
Legislative establishment	21.4	21.9	17.7	16.6	19.6	24.7	20.7	21.1	20.8
Agricultural Department	71.5	98.1	72.2	62.7	71.1	122.9	176.1	150.1	124.9
Department of Commerce	56.9	48.1	41.7	30.8	39.1	44.3	40.3	41.2	44.5
Department of the Interior	60.6	63.4	55.8	49.9	74.4	78.5	112.4	122.6	95.2
Department of Justice	44.4	51.7	44.1	31.7	32.8	38.5	38.6	39.8	40.7
Department of Labor	12.2	14.7	13.7	12.7	18.6	26.0	30.7	24.5	17.5
Postoffice Department (deficiency)	145.7	203.1	117.4	64.2	64.1	85.0	39.3	29.6	18.2
Department of State	15.3	16.7	13.8	12.1	18.7	17.2	17.1	17.6	16.3
Treasury Department	130.1	161.1	133.0	111.8	133.1	164.1	184.6	178.1	157.1
War Department (non-military)	40.9	47.9	43.1	41.1	44.1	40.2	53.1	47.5	48.2
District of Columbia	9.5	9.5	7.8	5.7	4.5	5.7	5.1	5.1	5.1
Independent offices and commissions	89.4	108.8	76.6	36.1	45.1	81.7	96.8	150.4	171.6
National defence	667.3	604.5	633.6	499.9	650.5	870.5	888.6	957.1	991.3
Veterans' pensions and benefits	942.6	972.8	848.9	554.1	605.0	2,348.6	1,128.2	573.7	538.6
Interest on public debt	611.6	599.3	689.4	756.6	820.9	749.4	866.4	927.1	976.1
Other (refunds of receipts, settlement of war claims, etc.)	97.1	150.1	69.7	62.8	38.7	41.1	48.1	47.9	50.8

\*Excess of credits, deduct.



Table II—Finances, Great Britain  
(From the *Economist's Budget Supplement* of April 10, 1937)

Period*	National Income £ mn.	Total Expenditure†		National Debt‡		Defence		All Other	
		£mn.	%	£mn.	%	£mn.	%	£mn.	%
1860-69§	899	66	7.3	26	2.9	27	3.0	13	1.4
1870-76§	1,177	70	5.9	27	2.3	26	2.2	17	1.4
1877-85§	1,242	79	6.4	29	2.3	30	2.4	20	1.7
1886-93§	1,410	80	5.7	26	1.8	32	2.3	22	1.6
1894-1903§	1,666	130	7.8	24	1.4	69	4.1	37	2.3
1904-1910§	1,940	138	7.1	27	1.4	62	3.2	49	2.5
1911-13§	2,241	165	7.4	24	1.1	73	3.3	68	3.0
1924	4,035	745	18.5	357	8.8	115	2.9	273	6.8
1929	4,384	771	17.6	355	8.1	113	2.6	303	6.9
1932	3,844	800	20.8	309	8.0	103	2.7	388	10.1
1935	4,530	776	17.1	224	4.9	137	3.0	415	9.2
1936	(4,850)	830	17.1	224	4.6	186	3.8	420	8.7
1937	(5,170)	936‡	18.1‡	224‡	4.3‡	278‡	5.4‡	434‡	8.4‡

\*Figures of National Income refer to calendar years, figures of expenditure to financial years ended March 31 of following calendar year.

†Including Road Fund expenditure, but not Post Office.

‡Estimate. §Annual average.

¶Figures are taken from *National Income and Outlay*, by Colin Clark (Macmillan, 1937), pages 88, 90, and 232; they represent net National Income, as defined by Mr. Clark. The figures for 1936 and 1937 are very tentative guesses for which Mr. Clark is not responsible; the 1937 figure in particular is necessarily very approximate.

¶Inc. Sinking Fund.

Next is the rise in prices, wages, and the general cost of government. While this adds to the absolute size of the budget, it does not necessarily add to the burden on the nation, for the national income has also expanded for the same reason. In 1911-13, expenditure of £165 millions equalled 7.4% of the then national income.

Today expenditure in the same proportion would be as much as £380 millions.

It is now possible to make a few simple calculations. The 1911-13 expenditure, less the cost of the national debt, would come to £141 millions, or 6.3% of the national income: 6.3% today is £326 millions. Add on £224 millions, representing the present cost of the national debt, and we get a total of £550 millions.

This represents very roughly the portion of today's expenditure of £936 millions due to the above two causes alone. The balance of £386 millions must arise from other causes.

These are three in number. First, there is the growing cost of rearmament. Munitions of war are far more complicated and costly than they were 30 years ago. To mention the most obvious example, the Royal Air Force, which did not exist in 1913-14, has an estimated cost of £82.5 millions in 1937-38. Similarly, the cost of the navy has risen from £48.8 millions in 1913-14 to £105 millions in 1937-38, and that of the army from £28 to £91 millions. Part of these last two increases is due to the intervening rise in prices, and so is included under the calculations in the previous paragraph; but there is no doubt that, especially since the beginning of rearmament just over two years ago, defence expenditure explains part of the increase in the burden of expenditure.

Next, the Government plays a far more active part in the general business of the country than it did before the War. Subsidies are now granted to various kinds of farm produce and also to shipping. The functions of the Board of Trade, the Ministry of Agriculture, and the Department of Overseas Trade have been greatly extended.

Without expressing any opinion upon whether the benefits of these new activities are in proportion to their cost, there is no doubt that in the aggregate they represent a substantial addition to national expenditure.

Finally, there is the rapid growth of social reform expenditure. In 1911-13 this was in its infancy. Old age pensions had only been inaugurated a few years before. The first Insurance Act, establishing health and unemployment insurance, only dates from these years, and the scope of unemployment insurance was then limited to certain trades. The cost of education to the Government (as distinguished from the local authorities) was only £15 millions. There were no war pensions, no widows' and orphans' pensions, no expenditure upon housing, slum clearance, or the abolition of overcrowding. The derating of industry and the substitution of new grants-in-aid to local authorities only dates from 1929.

The current cost to the Government and local authorities is illustrated by the following table, relating to 1934-35:

	Million £'s					Number of persons (a) benefiting directly (Mns.)
	Expenditure	Receipts from			Total Receipts	
		Local Rates	Parliamentary Votes or Grants	Other Sources (Fees, etc.)		
Unemployment:						
Insurance benefit. . .	52.9	—	21.1	42.1	63.3	12.5
Transitional benefit. . .	46.2	—	46.2	—	46.2	
Health Insur. . .	36.7	—	6.7	33.8	40.5	18.5
Pensions:						
Widows, etc. . .	43.2	—	—	23.6*	23.6*	2.1
Old Age . . .	42.4	—	42.4	—	42.4	1.8
War . . . . .	41.2	—	41.2	—	41.2	0.9
Education . . .	106.3	48.5	49.1	8.7	106.3	8.0
Housing . . .	46.1	2.9	15.7	27.5	46.1	—
Poor relief . . .	49.2	45.4	0.4	3.4	49.2	1.9
Other . . . . .	23.8	20.8	0.4	2.8	23.8	—
Total . . . . .	488.0	117.5	223.0	141.9	482.5	—

\*Exchequer contribution of additional £13,000,000 to Treasury Pensions Account.

(a) Unemployment and Health insurance: insured persons.

The Government's share is £223 millions, compared with a smaller amount in 1911-13.

In fact, today's cost is considerably more than the whole of the 1911-13 budget, and is comparable with the present cost of the national debt.

These roughly are the main causes of the size of present-day budgets. Expenditure is high today, both absolutely and relatively to the national income. Nor, with the rearmament program ahead, can the European tax-payer, for one, look for any relief in the near future.

Budgets all over the world have increased to an enormous extent. In France, the latest (1937) budget placed ordinary expenditure at frs. 52,691 millions, and to this should be added extraordinary expenditure of frs. 14,100 millions. Germany has issued no returns of expenditure since March 31, 1935. Gross Reich revenue in the year 1936-37 was rm. 11,492 millions, and disclosed borrowing was rm. 1,903 millions. Even these two together did not provide enough funds to meet current expenditure, for there was also a substantial amount of undisclosed short-term borrowing.

It is, in fact, extremely difficult to determine the current expenditure of many foreign Governments, or to make a valid comparison with pre-War days. Such comparison has become almost impracticable. The most that can be said is that current government expenditure is very heavy, indeed.

(N. E. C.)

Governors and Premiers: see BRITISH EMPIRE.



**owrie, Alexander Gore Arkwright Hore-Ruthven,**

**T BARON** (1872— ), V.C., G. C. M. G., British imperial administrator, second son of the 8th Lord Ruthven, born at Windermere on July 6, 1872, was educated at Eton. Joining the Highland Light Infantry in 1891, he took part in the Sudanese campaign in 1898, and won the Victoria Cross at the age of 27. Lord Gowrie served also as a special service officer in the Somali campaign of 1903-04. From 1905 to 1906 he was military secretary to the Governor of Ireland, and in 1908 to the governor-general of Australia. During the World War he fought with the Welsh Guards in France and Gallipoli, being severely wounded, receiving the D.S.O. in 1916, and several mentions in despatches; in 1917 he was promoted brigadier-general. From 1920 to 1924 he was in command of the Welsh Guards, and from 1924 to 1928 of the First Infantry Brigade at Aldershot. In the latter year he was appointed Governor-general of South Australia, and was created K.C.M.G., and in 1935 was transferred to the governor-generalship of New South Wales. On Aug. 18, 1935, his appointment as governor-general of the Australian Commonwealth was announced, and he assumed office on Jan. 22 of the following year. In Dec. 1935 he was created a baron, and on May 11, 1937, became a privy councillor.

**ozo:** see MALTA.

**rain:** see BARLEY; CEREALS; CORN; OATS; RICE; RYE; WHEAT.

**Grand Army of the Republic,** organization of Northern veterans of the U.S. Civil War, held its seventy-first national encampment at Madison, Wis., from Sept. 5-9, 1937. Of the 3,325 living members (1,072 having died since the 1936 meeting), less than 200 were able to attend but 122 could join in the mile parade. Those attending the convention, many of whom had been among the 107,098 who enrolled at fifteen or under, travelled in special railroad coaches attended by nurses. The convention heard U.S. Veteran Administrator Hines urge support of world peace movements and selected E. Overton H. Mennet, of Los Angeles, a retired Indiana physician, to succeed C. H. William Ruhe, of Pittsburgh, as commander. Des Moines, Iowa, was chosen as the city for the 1938 encampment. The most important action of the meeting, however, was the decision by secret ballot to participate with ex-Confederates in the seventy-fifth anniversary ceremonies of the battle of Gettysburg, July 1-3, 1938, as long as Confederate flags were not displayed. This condition proved no more acceptable to Confederate veterans than the use of the term "war between the States" and the invitation had proved to the assembled veterans of the North.

**Grand Coulee Dam:** see AQUEDUCTS; DAMS.

**granite:** see MARBLE AND GRANITE.

**grapefruit.** Production of grapefruit in 1937 centred in four States of the U.S., in South Africa, Cuba and Palestine. In the U.S. the crop in four States, Florida, Texas, Arizona and California, was 26,090,000 boxes, compared to 30,281,000 in 1936. The average annual crop in the U.S. in the five years 1928-32 was 14,730,000 boxes, as reported by the U.S. Department of Agriculture. Production in these four States in 1937 was as follows, with figures in parentheses being for the 1936 crop: Florida, 13,000,000 boxes (18,100,000). Of this crop 5,000,000 boxes were seedless grapefruit and 8,000,000 boxes, other varieties. The five-year annual average production, 1928-32, in Florida was 16,577,000 boxes. Texas, 8,900,000 boxes (9,231,000) and a five-year annual average of 1,457,000 boxes, which indicates how the

industry has grown in that area. Arizona, 2,300,000 boxes (1,400,000) and a five-year average of 408,000 boxes. California, 1,890,000 boxes (1,550,000) and a five-year average of 1,209,000 boxes.

South Africa exported to the United Kingdom 375,000 boxes of grapefruit in 1937 and British Honduras exported 35,000 boxes of grapefruit, 5,000 cases of canned grapefruit, and 4,000 gal. of juice. The United Kingdom took more than 1,000,000 of the 1,130,000 cases of canned grapefruit exported by the U.S. in the season of 1936-37, which produced an unusually large crop. Cuba's exports of grapefruit to the U.S. in 1937 were 11,388,000 lbs., compared to 11,563,000 lbs. in 1936. Exports of grapefruit from Palestine in 1937 were about 1,500,000 boxes, and 1,540,000 boxes in 1936.

(S. O. R.)

**Grapes.** With the exception of the United States, where the crop made a new record of 2,731,980 tons, the grape crop throughout the world in 1937 was generally disappointing and below the average. In France, wine production for 1937 is estimated at 1,300,000,000 gal., about 20% below the annual, five-year average.

Grape production, as measured in wine, American gallons, is given by the International Institute of Agriculture for the principal grape-growing countries, as follows, figures in parentheses being for the preceding year, 1936:

France, 1,300,000,000 gal. (1,154,033,000) and a five-year average of 1,663,622,000 gallons. Italy, 888,935,000 gal. (888,944,000) and a five-year average, annual production of 1,016,049,000 gallons. Algeria, 408,240,000 gal. (304,509,000). Spain, 273,400,000 gal. (no reliable data for 1936). The five-year annual average is 297,023,000 gallons. Greece, 84,927,000 gal. (50,694,000). Germany, 66,627,000 (87,583,000). Tunisia, 38,508,000 gal. (37,301,000). Danubian countries about half the production of 1936, which was 177,171,000 gal. in Rumania, 119,905,000 gal. in Hungary and 102,111,000 gal. in Yugoslavia. Austria, 22,534,000 gal. (30,012,000). Switzerland, below the 1936 vintage of 13,367,000 gal. and Czechoslovakia also under the 1936 crop of 13,862,000 gallons. Portugal had a larger crop than the 1936 crop of 97,978,000 gal., but below the five-year average of 208,482,000. Total world production of wine in 1937 is placed at between 4,200,000,000 and 4,500,000,000 gal. by the Institute, compared to 4,020,000,000 gal. in 1936 and a five-year average of 5,048,000,000 gallons. Southern hemisphere production in 1937 was 395,000,000 gal., chiefly from Argentina. In the United States, the 1937 grape crop was 43% larger than the 1,916,460-ton 1936 crop and 23% larger than the five-year average of 2,214,482 tons. California production in 1937 was 2,409,000 tons, of which 572,000 tons were wine grapes. Production of raisin grapes was estimated at 1,483,000 tons.

(S. O. R.)

**Grasshoppers:** see ENTOMOLOGY: Locusts or Grasshoppers.

**Gravure:** see PRINTING.

**Great Britain, Royal Institution of:** see ROYAL INSTITUTION OF GREAT BRITAIN.

## Great Britain & Northern Ireland,

**United Kingdom of.** This comprises the main island of Great Britain, with numerous smaller islands off the English and Scottish coasts, and the six north-eastern counties of Ireland. It is a constitutional monarchy, with a King and a Parliament of two houses, the House of Lords consisting of about 670 hereditary peers, 24 spiritual peers, 16 Scottish representative peers, a number of Irish representative peers, (at present 14; vacancies are no longer filled), and a few life peers who have held high judicial office; and House of Commons,



numbering 615 members, elected by a practically universal suffrage. Ruler, King George VI; acceded Dec. 11, 1936, on the abdication of his elder brother, Edward VIII. Capital, London. Flag, the Union Jack, consisting of a red cross on a white field (for England), surcharged on a diagonal red cross on a white field (for Ireland), surcharged in turn on a diagonal white cross on a blue field (for Scotland).

**Area and Population.**—94,278 sq.mi., of which England (without Monmouthshire) covers 50,328 square miles. Population (census 1931), 44,937,444; of which England (without Monmouthshire) has 37,219,842; density 477 per sq.mi. Eighty per cent of the population in England and Wales are resident in urban areas. Death-rate (1936), 12.1 per thousand living; birth-rate, 14.8 per thousand living; infantile death-rate (under one year), 59 per thousand born alive. London, the capital, had a population at the 1931 census of 4,396,821 ("Greater London," or the Metropolitan Police area, having 8,202,818); in 1936 the estimated populations were 4,141,100 and 8,575,700 respectively. The next largest cities in England, with populations as estimated in 1937, are: Birmingham (1,018,800); Liverpool (846,400); Manchester (744,000); Sheffield (518,200); Leeds (489,862). In 1931 there were in England 113 towns with a population exceeding 50,000. (See also IRELAND, NORTHERN; SCOTLAND; WALES.) (X.)

**History.**—The year 1937 was marked by two events which, by reason of the deep personal emotions they aroused, made a lasting and unforgettable impression on the national mind: the coronation, and the retirement of Mr. Baldwin. The solemn and religious dedication of the young King and Queen—the word "young" was used by Mr. Baldwin in his coronation message, and we tend to think of them perhaps as younger and less experienced than they are—to the duties of their high office, was followed in all its details, not only by the thousands who lined the streets to witness the procession, but also by the millions all over the country at their own firesides, and indeed by countless millions more all the world over. The use of the microphone made the coronation of King George VI and Queen Elizabeth unique in the long line of British coronations, and far more nationally significant than any of its predecessors. Not only the favoured few, but all the world was with them in the Abbey throughout the noontide hours of May 12.

And if the coronation opened a new epoch to which His Majesty's subjects at home and abroad look forward with fundamental confidence, but also with far more anxieties than one could wish for, so did the retirement of Mr. Baldwin, 16 days later, bring to a close a career of public service which, in a peculiar degree, won admiration and gratitude extending far beyond the wide circle of his political supporters. Almost unknown to the public until four years after the end of the War, Mr. Baldwin had, between 1923 and 1937, been three times prime minister, and one of the two principal architects of the National Government which was formed to meet the financial crisis of 1931. Moreover, for 12 of these 14 years he had been the leader of the largest party in the House of Commons. Nineteen thirty-seven also saw deaths of Mr. Ramsay MacDonald, whose premierships had alternated with those of Mr. Baldwin during this period, and of Sir Austen Chamberlain and Mr. Snowden, two others of the ten statesmen who formed the Cabinet of the first National Government.

The accession to the premiership of Mr. Neville Chamberlain had for some time been a foregone conclusion, and was generally welcomed, in spite of the effort of some opposition journals to suggest that he would prove less friendly to social reform than his predecessor. The prize that has fallen to his lot had been missed by both his father and his elder brother before him.

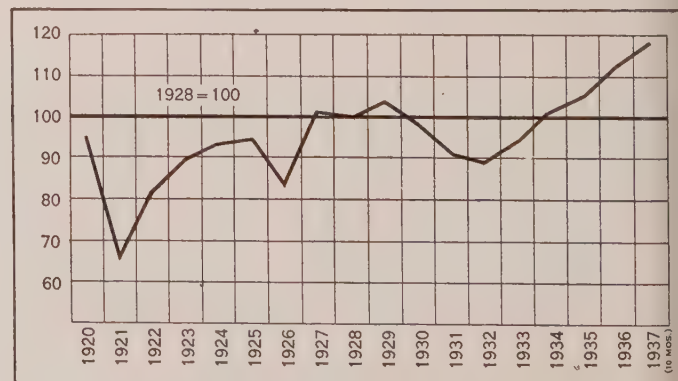
In the sphere of domestic affairs, the year was marked by businesslike legislative activities, and by a fairly steady though not unbroken rise in industrial and commercial prosperity, for which the enormous rearmament program of the Government was partly, though only partly, responsible.

Of foreign relations and the prospects of peace, it is impossible to write with the same confidence and conclusiveness. The major problems waiting for solution at the beginning of the year were still unsolved at the end of it. The year's events in this department are such as cannot yet be seen in their true perspective. A further interval of time must elapse before the historian will be in a position to decide whether the average gradient of 1937 was upwards towards a peace worthy of the name or downwards towards disaster.

The course of events abroad, and the part the British Government has sought to play in connection with them, was watched with strained attention, of which evidence is to be found in the numerous debates on foreign affairs in the House of Commons. Perhaps these debates were too numerous. They compelled the foreign secretary and the prime minister to make guarded statements of policy at times when their work might have been eased had they been free to make no statement at all, and, owing to the supposed requirements of party politics, such debates suggest to foreign observers a degree of national disunity of opinion which did not in fact exist. None the less, they must be accepted as a manifestation of democracy, which, as Mr. Baldwin has said, is the most difficult as well as the best form of Government.

**Foreign Relations.**—The Spanish Civil War, which began in the summer of 1936, continued with unabated fury, and though the Nationalists under Franco, with their Italian and German auxiliaries, made extensive gains, the end was not in sight at the conclusion of 1937. On the southern coast the Nationalists advanced to Malaga and Motril in February, and in April they launched their big offensive on the Basque provinces of the north, which formed a detached group acknowledging the authority of the Valencia Government. Bilbao fell in June, Santander in August, and Gijon in September, and all these northern provinces became part of General Franco's domain. Around Madrid the fighting was destructive but inconclusive. In the last weeks of the year the Government forces made a successful assault upon the salient of Teruel, the nearest point to Valencia held by the Nationalists, but at the end of the year it was not clear whether they would be able to hold what they had gained.

The consistent aim of the British Government, summarized as "non-intervention," was achieved in so far as the Spanish conflict did not degenerate into a general European war, and seemed less likely to do so at the end of the year than on some earlier occasions. It was not achieved in so far as its aim was to secure the withdrawal of the non-Spanish volunteers fighting with the thinly veiled encouragement of their respective Governments on



UNITED KINGDOM: Index of business activity (*The Annalist*)





"BUT WHO WILL TAKE THE HEAD?" A British comment on the unity movement in Ireland, by Grimes in *The London Star*

other side. The British Government was the only Government of the Great European Powers which could claim a genuine neutrality of attitude towards the conflicting Spanish parties, but its carefully balanced program of withdrawal, laid before the Governments concerned at a conference in July, failed to give satisfaction. In March, the London Non-intervention Committee succeeded in establishing a scheme of supervision by land and sea which for a time prevented the arrival of further volunteers; but in June the bombing of a German battleship by Government aircraft, followed by the alleged firing of torpedoes at a German cruiser, led to the breakdown of this scheme by the withdrawal of Germany and Italy. In August there was an outbreak of attacks on the shipping of various nationalities by unidentified submarines in all parts of the Mediterranean. This was fairly promptly suppressed by the Nyon Agreement of Great Britain and France, subsequently joined by Italy, allotting zones of control to the several Mediterranean fleets. (See also MEDITERRANEAN, THE; SPAIN, CIVIL WAR IN.)

In the latter half of the year the Spanish Civil War was thrown to the background by the formidable attack launched by Japan on China. The pretexts for this war in the Far East were two comparatively trivial affrays, in which a few Japanese soldiers lost their lives, and there can be no doubt that the military coterie which rules Japan welcomed the opportunity of increasing their hold on the mainland of Asia. The Japanese launched their attack on Shanghai in August with forces which at first proved inadequate in view of the stubborn and skilful Chinese resistance, but by the end of October the country round Shanghai was in Japanese hands, and before the end of the year their forces had moved to the river Yangtze Kiang and occupied Nanking, the Chinese Government having shifted their capital to Chungking, several hundred miles up the river. In the north, the Japanese invasion spread over a territory three times as large as the United Kingdom, and including the old capital, Peking.

There can be no question that the Japanese, while supported

wholeheartedly by Italy and with reservations by Germany, have had a "bad press" in Great Britain. They have shown a singular inability to make plain to the Anglo-Saxon world the genuine difficulties of their position and their real grievances against China. Moreover, the wholesale destruction of life by the Japanese bombing of Chinese towns outside the area of hostilities provoked a vigorous condemnation of Japanese methods, even among those who realized that such incidents are bound to form an integral part of large-scale warfare under modern conditions. Neutrals have suffered from the military activities of both belligerents. In August, Japanese aeroplanes bombed a car containing the British ambassador to China, and in December they attacked with bombs and machine-gun fire a gunboat belonging to the United States. Protests were made after both these and other like incidents, with no result beyond formal apologies. British, and indeed world-wide, diplomacy has proved powerless to deal with the situation. A conference at Brussels of the signatories (including America) of the Nine-Power Pact, which regulated the Far-Eastern position in 1921, broke up without achieving any valuable result (see CHINESE-JAPANESE WAR; NINE-POWER CONFERENCE).

No appreciable advance or retrogression has been made in connection with the problems of Germany's relations with Great Britain and France. Italy and Germany have made carefully staged and spectacular advances towards amity on an "ideological front" in opposition to Communist Russia and her French ally. Germany continues to profess willingness to make a bilateral agreement with France, whereas France is unwilling to enter upon discussions unless they include the safeguarding of her allies in central Europe. With Soviet Russia, Germany will have no terms but those of frank hostility. The German demand for the restoration of her forfeited colonies has been widely and sympathetically discussed in the British press, but such discussions have served only to bring out the difficulties in the way of any plan of restoration, and the determination of most British schools of thought that, if there is to be a reassignment of territories which changed hands at or after the Treaty of Versailles, Great Britain must not be the only country called upon to make sacrifices in the interests of European appeasement. The visit of Lord Halifax, a distinguished member of the British Government, to Herr Hitler in November was a friendly gesture accepted in the spirit in which it was offered, but it is impossible to say whether it achieved any permanently valuable result.

*The Empire.*—The great event of the year in the history of the British Empire was the inauguration, in April, of Provincial Autonomy in the 11 provinces of British India under the terms of the Government of India Act of 1935. Of the 30,000,000 electors, though the majority of them are illiterate, 54% went to the polls, a result which compares favourably with any local Government election in England. The Congress party secured a majority in six provinces, and for some time it looked as though the extremist leaders of the party would persuade their provincial representatives to refuse to assume office in the Provincial Governments except on terms which the governors could not grant. Not for the first time, however, the immense prestige of Mr. Gandhi was thrown on to the side of moderation, and by July ministries representing the elected majorities had taken office in every province. The prospects of federation between British India and the Indian States have become more remote. However, the new Federal Court was established in the course of the autumn. (See also INDIA.)

Palestine, though not officially within the British Empire, is none the less a British responsibility. When the British Government undertook, after the War, the supervision of Palestine under a mandate with the purpose of establishing there a National



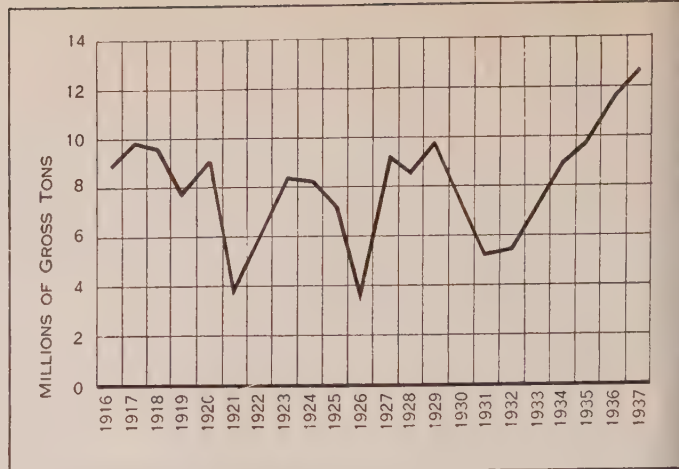
Home for the Jews, it was optimistically assumed that the incoming Jews and the native Arabs would amicably combine and form a single nationality, which could ultimately be entrusted with the Government of the country. It seems doubtful, in retrospect, whether this result could have been secured even under the most favourable circumstances. But conditions ever since the granting of the mandate had been consistently unfavourable, and Palestine had become the home of two rival nationalisms, neither of which was prepared to tolerate the other. The last and worst of several epochs of "unrest" led to the sending out of Lord Peel's Commission, which in June issued a report recommending the partitioning of the country. The Jews were to receive, ultimately in full sovereignty, a coastal strip, together with Galilee; the rest was to be joined with the existing Arab kingdom of Transjordan, with the exception of Jerusalem and a corridor to the coast, which was to remain permanently under a British mandate. The British Government accepted in general terms the proposals of the report, and secured the assent of the League of Nations to the further proceedings which the policy thus described involves. (See also PALESTINE.)

**Home Affairs.**—In domestic affairs the outstanding and characteristic activity of the year was the rearmament program, with its many and ramifying corollaries—increased taxation and diminished unemployment being the most obvious. During the year, £278,000,000 was spent on defence, of which £80,000,000 was to be met from the loan raised early in the year. In his last budget Mr. Chamberlain raised the income-tax by threepence to five shillings, and proposed a special and temporary tax on the growth of profits as a National defence contribution. The details of this scheme were condemned as unfair and unworkable by the leaders of the world of business, and after Mr. Chamberlain had become prime minister, his successor as chancellor, Sir John Simon, agreed to impose instead a general tax on all profits. An Air Raid Precautions bill became law, enacting measures for which responsibility is divided between the home office and the local authorities. In the course of the year many thousands of civilians of both sexes all over the country received their first lessons in the handling of gas masks. Mr. Hore-Belisha, promoted from the Ministry of Transport to the War Office, undertook a widely and judiciously advertised campaign for attracting recruits to the regular and territorial armies by improved conditions of service, and the recruiting for both branches reached higher figures than had been seen since the War.

The general legislation of the year, voluminous and useful but not spectacular, calls for little comment here. Most of it—the long-promised Factory Act, for example—embodied policies on which there was general agreement, and little scope was offered for "party politics" of the old-fashioned kind. Indeed, the various sections of the opposition appeared to disagree more heartily with one another than with the Government. A bill regularizing the anomalous salaries of members of the Government was followed by the adoption of proposals raising the salaries of all M.P.s from £400 to £600 a year. The enactment of the Matrimonial Causes bill, enlarging the grounds of divorce, was a personal triumph for Mr. Herbert, and an encouragement to private members in general to make the best use of the legislative facilities available for them. Indeed, more private members' bills reach the statute book year by year than the public in general realizes, though few of them deal with such thorny subjects as divorce.

Official recognition of the fact that the population is threatened with a reduction in numbers which may well become catastrophic in the course of a very few generations was afforded by the Population Statistics bill, enabling the registrars of births and deaths to obtain more detailed information than heretofore.

Scotland received a new and active-minded secretary of State



STEEL PRODUCED in Great Britain, 1916-1937

in Dr. Walter Elliot, who is devoting himself to problems of slum clearance, in which Scotland still lags far behind England. Northern Ireland observed with equanimity the new constitution promulgated by Mr. de Valera, which defined the territory of the Irish Free State as embracing the whole of "Eire" and its adjacent islands.

For wage-earners in general the year was one of solid progress. The total increase in wage rates amounted to £723,000 a week, a sum nearly equalling the combined increases of the three previous years since the turn of the tide after the great slump. Prices have also risen, but they have barely reached the price level of 1929, whereas wages are substantially in excess of the wages of that year. Rising prosperity is apt to be attended and impeded by widespread strikes, but 1937 has been remarkably free from such manifestations, which is evidence both of better feeling between employers and employed than prevailed in the years between the War and the general strike, and also of the existence of more efficient machinery for the adjustment of wages to changing conditions. An exception to the general amity of capital and labour was the ill-advised London bus strike, which covered the period of the coronation. The most notable industrial feature of the year was the rapid extension, without the need of legislative encouragement, of the system of holidays with full pay. It is estimated that nearly five million wage-earners, more than a third of the number of wage-earners insured against unemployment, now enjoy this privilege. An announcement, made in the first week of 1938, may perhaps be brought within this survey, since it may mark the beginnings of extensive experiments. A large Lancashire firm have undertaken to pay to their employees a weekly bonus of five shillings for each child in excess of three children in the family.

(D. C. So.)

**Transport and Communications.**—Railway developments in 1937 included the introduction of electric working on the line from London to Portsmouth (95 route miles) and the speeding-up of services between London and Northern England and Scotland, for which new rolling-stock and stream-lined locomotives were built. A 5% increase in railway rates came into force in October. Road development is proceeding in accordance with the "Five-Year Plan" announced in 1935, but no new spectacular schemes have come to the fore. Work was begun on a Dartford-Purfleet tunnel under the Thames east of London. In January a committee under Sir Henry Maybury recommended the co-ordination of inland mail and passenger air services, to be based on a central junction in the Manchester-Liverpool area. Imperial Airways Ltd., whose fleet consisted in November of 73 machines in commission or on order, inaugurated an air-mail service to East and South Africa in June, carrying letters at the rate of 1½d. per half-



nce. In November 8,424,000 wireless licences were current in Great Britain, and in October it was announced that for the first time broadcasts in foreign languages (Spanish, Portuguese and Arabic) were to be undertaken. Telephone developments included the laying of the first coaxial cable between London and Birmingham, in which two conductors can carry about 250 simultaneous conversations.

**Agriculture.**—Of the total land area of Great Britain, 21.5% lower proportion than in any other year since the World War) was arable in 1936; 31% permanent pasture, and 28% rough grazing land. Land is at present being continually transferred from crops to permanent grass. Some 1,798,000 ac. were under wheat, 2,249,000 under oats, 891,000 under barley, and 1,000,000 under potatoes, the total produce of these crops being respectively 6,759,000 quarters, 12,149,000 quarters, 3,809,000 quarters, and 3,804,000 tons. Fruit-growing occupied 327,718 ac. (excluding Northern Ireland). The estimated total value of agricultural output in England and Wales was £208,165,000, and the number of separate holdings (over one acre) 448,481, of which 434,229 were under 300 acres. Milk production was estimated at 1,414 million gallons. Livestock included 7,853,307 cattle, 24,205,423 sheep, 1,012,743 horses, and 4,040,176 pigs. It was announced during 1937 that the Government proposed to take measures to restore fertility, so that production might be increased in the event of war, and to raise by one-third the limit of wheat production allowed under the Wheat Act of 1932; and that a Livestock Commission would be set up, a subsidy of £5,000,000 being paid to producers of fat cattle.

**National Resources.**—One million forty-four thousand and thirty-three tons of sea fish (other than shellfish) were taken in British waters and landed in Britain during 1936, of an estimated value of £15,749,163. The latest statistics show that about 32,000 persons are employed in the fishing industry. The coal output in 1936 was about 228,000,000 tons, of which 50,330,000 tons were exported, 176,000,000 tons being available for home consumption. Attempts to find oil were continued during 1937 in Sussex and elsewhere, but without success. The output of electricity by authorized undertakers in 1936–37 was 20,868 million units, an increase of 13.3% over the previous year; 16,803,500,000 units were sold to 7,652,000 consumers.

**Commerce and Industry.**—The following table shows the value of Great Britain's exports and imports for the last complete year (1937). The figures represent thousands of pounds sterling:

	Imports	Exports	Re-exports
Food, Drink, and Tobacco	432,373	38,780	13,181
Raw Materials, etc.	315,345	64,652	36,914
Manufactured Articles	274,985	404,839	24,444
Animals not for Food	3,031	850	628
Parcel Post	3,331	12,473	—
Total	£1,029,065	£521,594	£75,167

Imports increased by £181,313, exports by £80,875, and re-exports by £14,751 over the preceding year. Of 1936 imports £32,380,000, or 39.2%, came from within the Empire, and 99.9% from the United States; of the exports of British produce £6,927,000, or 48.5%, went to countries within the Empire, and 7% to the United States.

The British mercantile fleet in 1937 amounted to 17,436,000 gross tons (26.7% of the world total). Five hundred and fifty new factories employing 25 or more persons were opened during 1936; and 14,381 new companies were registered, with a nominal capital of £164,422,038. The total number of public companies with share capital in England, Wales, and Scotland at the end of 1936 was 14,742, with paid-up capital of £3,993,-

310,303; of private companies, 130,820, with paid-up capital of £1,741,605,643.

**Banking and Finance.**—The unit of currency is the gold sovereign, weighing 123.274 grains eleven-twelfths fine, divided into 20 shillings (a silver coin .500 fine and weighing 87.27 grains) or 240 pennies; since the World War the ordinary currency, apart from silver and bronze coins, has been Bank of England notes of one pound and 10 shillings, which are legal tender (even by the bank itself) for any amount. On Oct. 13, 1937, the amount of bank notes issued was £526,406,625, of which £489,858,849 was in the hands of the public, and £36,547,976 in those of the bank. In November the fiduciary note issue was temporarily raised (for two months) from £200,000,000 to £220,000,000 to meet seasonal demands. The gold reserve of the United Kingdom in 1937 was estimated at 1,531 million pre-War gold dollars.

An exchange equalization fund of £350,000,000 operates when necessary by the issue of treasury bills to prevent undue disturbance in foreign exchange rates, but details of its operations are not made public.

The budget of April 1937, excluding self-balancing revenue and expenditure, showed an estimated revenue for 1937–38 of £863,100,000, and an expenditure of £862,848,000, as in the following table:

ESTIMATED REVENUE		
	£	£
Property and Income Tax	288,150,000	
Surtax	58,000,000	
Estate and Death Duties	89,000,000	
National Defence Contribution	2,000,000	
Stamps	29,000,000	
Other Inland Revenue Duties	1,500,000	
Total Inland Revenue		467,650,000
Customs	219,850,000	
Excise	113,150,000	
Total Customs and Excise		333,000,000
Motor Vehicle Duties		34,000,000
Crown Lands		1,350,000
Interest on Sundry Loans		4,300,000
Post Office (net receipts)		11,800,000
Miscellaneous		11,000,000
Total Ordinary Revenue		£863,100,000
ESTIMATED EXPENDITURE		
		£
Grants for Local and Other Services		181,274,000
Irish Services		15,162,000
National Debt, Interest and Management		224,000,000
National Pensions and Insurance and Unemployment Assistance		182,497,000
Defence		200,650,000
Tax Collection		14,274,000
All Other Services		34,991,000
Margin for Supplementary Estimates		10,000,000
Total Ordinary Expenditure		862,848,000

Not included in this table are the self-balancing items of £72,238,000 for the postoffice revenue required to meet its expenditure, and £2,870,000 for the broadcasting grant obtained from licence fees.

The main sources of the tax revenue of the United Kingdom are customs, excise duties (especially on alcoholic liquors and entertainments), income tax and surtax, estate and legacy duties, motor vehicle duties, and stamp fees. For the proceeds raised from these sources and for any changes in the incidence of taxation, etc., see BUDGET.

The National debt at the end of March 1937 totalled £7,916,526,894 (internal, £6,883,963,804; external, £1,032,563,090), including £897,534,246 due to the United States of which no repayment has been made since 1932. Against this was to be set £119,000,000 for Victory Bonds, etc., purchased by the National Debt



Commissioners but not yet cancelled.

Great Britain has no State bank. The Bank of England (in Scotland, the Royal Bank of Scotland) operates under Royal charter in close association with the treasury, and lends money to the State. Commercial and private banking is largely concentrated in the hands of five great joint-stock banks, though numerous smaller institutions also operate. The Bank of England return of Dec. 8, 1937, showed:

ISSUE DEPARTMENT		
Notes issued:		
In circulation . . .	£492,830,681	
In Banking Dept. . . . .	53,575,934	
		Govt. Debt . . . . . £11,015,100
		Other Govt. securities . . . . . 208,685,237
		Other securities . . . . . 288,836
		Silver coin . . . . . 10,827
		Fiduciary issue . . . . . 220,000,000
		Gold coin and bullion . . . . . 326,406,625
	£546,406,625	£546,406,625
BANKING DEPARTMENT		
Capital . . . . .	£14,553,000	Govt. securities . . . . . £87,243,165
Rest . . . . .	3,323,949	Other securities:
Public deposits . . .	11,741,792	Discounts and advances . . . . . 9,640,659
Other deposits:		Securities . . . . . 20,954,876
Bankers . . . . .	106,310,262	Notes . . . . . 53,575,934
Other accts. . . . .	36,057,844	Gold and silver coin . . . . . 1,172,213
	£172,586,847	£172,586,847

During the year the note circulation of the Bank of England for the first time in history passed the £500,000,000 mark. In 1936 the 11 London clearing banks' total clearings were £40,616,574,000, an increase of £3,056,823,000 or 8.1% over the previous year. On March 31, 1937, £1,378 millions were invested in Postoffice and Trustee Savings banks and in National Savings Certificates—the highest total ever known. The balance due to depositors in the Postoffice Savings Bank on Dec. 31, 1936, exceeded £432,000,000, in addition to £165,000,000 invested in Government stock; deposits made during the year exceeded £130,000,000.

**Education and Religion.**—Education, both elementary and secondary, is administered by the local authorities under the supervision of the Ministry of Education (or, in Scotland, the Scottish Education Department). In 1936 there were 20,880 elementary, special, and nursery schools in England and Wales, of which 10,180 were "public" (wholly maintained by local education authorities) and 10,700 "voluntary" (partly so maintained, but managed by religious or like organizations), with a total average

daily attendance of 4,748,453. In Scotland there were 2,900 primary schools, with an average daily attendance of 580,233. Elementary teachers in England and Wales numbered 169,591; in Scotland, 19,461.

"Efficient" secondary schools in England and Wales in 1935-36 numbered 2,116 (of which 1,389 were aided by Government grants), with 559,248 pupils and 24,003 teachers; in Scotland 251 post-primary schools had 159,591 scholars and 6,764 teachers. The total expenditure on education by local authorities in England and Wales (1935-36) was £21,153,338, for higher and (1936-37) £69,591,538 for elementary schools; in Scotland (higher and elementary, 1936-37) it is estimated at £13,403,097. In 1936 England and Wales had 263 technical and commercial colleges and other similar institutions, with 38,172 full and 1,044,958 part-time students. Scotland had 145,774 students attending 953 centres of various kinds for continuation classes. England has 11 universities (Oxford, Cambridge, London, Durham, Manchester, Birmingham, Liverpool, Leeds, Sheffield, Bristol, and Reading), with in all about 4,450 professors, lecturers, etc., and 39,650 students, and five University colleges at Exeter, Hull, Leicester, Nottingham, and Southampton. Nineteen thirty-seven was remarkable for a donation of £2,000,000 to Oxford university for medical research, and later £1,000,000 and a site for a new college for post-graduate social studies and for other purposes, both by Lord Nuffield; and plans were announced during the year for the reconstitution of Durham university.

The language spoken and taught in the schools of Great Britain is English; but in Wales and Scotland Welsh and Gaelic respectively are still the only languages of a small proportion of the population.

In England, the Protestant Episcopal Church is established by law, and is governed by two archbishops and 41 bishops, with (1936) 2,382,857 Easter communicants. The largest Nonconformist bodies are the Methodists, Congregationalists, and Baptists (*qq.v.*); there are some 2,350,000 Roman Catholics, and about 300,000 Jews. (*See also IRELAND, NORTHERN; SCOTLAND; WALES.*)

**Defence Forces.**—The navy, army, and air force of Great Britain are separately administered, but the Cabinet includes a minister for the co-ordination of defence, and a Committee of Imperial Defence, representing all three services, overlooks general policy. Parliament has authorized the raising by loan of £400,000,000 for defence purposes.

**Navy.**—The British navy is governed by the Board of Admiralty, headed by the First Lord of the Admiralty (a Cabinet Minister), and including also four Sea Lords, a deputy and an assistant chief of naval staff, a Civil Lord, a parliamentary secretary and a permanent secretary. The authorized personnel (officers and men) is 112,000. Vessels in service, building, or projected in 1937 included 20 battleships and battle cruisers (15 completed), 15 heavy cruisers, 62 other cruisers, 202 destroyers and 70 submarines; the shipbuilding program for 1937-38 includes 3 battleships, 2 aircraft carriers, 5 large and 2 small cruisers, 16 destroyers, 7 submarines, and 43 other craft. Of the five capital ships now under construction, two will be ready in 1939 and three in 1941.

During 1937 some 32 new ships (including six cruisers, nine destroyers, and three submarines) were completed. The budget estimate for the navy for 1937-38 totalled £78,065,000 with additional expenditure otherwise provided for of £27,000,000.

**Army.**—The British army is enlisted throughout on a voluntary basis. It is administered by the Army Council, presided over by the secretary of State for War (a member of the Cabinet) and including eight other members. The regular army establishment (excluding India) provided for in the 1937-38 estimates was 168,900 officers and men. The Territorial army, the main auxiliary



"A SWEETENER!" Trade-pact negotiations between Great Britain and the United States, as seen by *The News of the World*, London





THE PORTICO of the Bank of England in Threadneedle Street, showing the symbolic sculptures

military force, serving in time of peace at home only, had on Dec. 1 an establishment of 203,000, and an actual strength of 158,948. It is being rapidly reconstructed, largely with a view to anti-aircraft defence. The army reserve on Jan. 1, 1937, numbered 118,400 effectives. The estimated expenditure for army purposes in the 1937-38 budget was £63,120,000, an increase of £7,500,000 over the estimates of the previous year; funds to be derived from loans, etc., raised the net total to be spent to £82,174,000.

During the year important changes in army conditions were announced, designed to promote recruiting, including the modernization of barracks, abolition of irksome pay deductions, changes in the age limits and physical requirements of recruits, etc. Plans that are being carried forward include the expansion of the tank corps, and of anti-aircraft units, the formation of two new infantry battalions, and the almost complete mechanization of the cavalry. At the beginning of Dec. 1937 important changes in the high command and General Staff were announced, senior officers retiring to make way for their juniors; and it was stated by the Secretary of State for War, Mr. Hore-Belisha—who had replaced Mr. Duff Cooper in May—that in future, not seniority, but "merit, character, and ability shall be the main entitlement to promotion and reward."

**Air Force.**—The Royal Air Force, a voluntarily enlisted body, is governed by the Air Council, consisting of the secretary of state for air and six other members. In April 1937 it consisted of 100 squadrons stationed at home, 26 serving overseas, and 20 serving with the Fleet Air Arm (the control of which latter, it was announced in July, is being transferred to the Admiralty). The strength of the air force in April, including auxiliaries, was 55,850; the establishment at present provided for is 70,000. Training takes place at 13 civil and 11 service flying schools.

Existing plans provide for the organization of a Metropolitan air force with a first-line strength of 1,750 aircraft organized in 124 (including 20 auxiliary) squadrons. A new Royal Air Force volunteer reserve for the training of civilians was formed during the year.

The budget estimates for 1937-38 envisaged an air force expenditure of £56,500,000, to be increased by expenditure on loan account to £82,500,000. A number of new aerodromes are under construction, principally on the eastern side of Great Britain, and during the year the output of aeroplanes and of aeroplane construction machinery was greatly accelerated.

**Police.**—The police of Great Britain are under the control of the County or Borough Councils, except in the London area (outside the "City"), which is policed by a force (the Metropolitan police) under the direct control of the home office. The efficiency of the provincial forces is secured by a system of Government inspection and grants in aid. In 1936 the total authorized strength of the police forces in Great Britain was 65,845 (England and Wales 59,238; Scotland 6,607), including 207 women (175 and 32 respectively).

Net expenditure for police purposes in England and Wales was £21,480,745; in Scotland £2,397,246. During 1937 much progress was made with the provision throughout the country of "police boxes" at convenient points which may be used by the public to get into instant touch with the police by telephone and, in London, a method of telephoning direct to Scotland Yard in cases of emergency was introduced.

**Greece** (*Kingdom of Hellas*), a monarchy of S.E. Europe, bounded W. by the Adriatic, N. by Albania, Yugoslavia and Bulgaria, E. by Turkey and the Aegean. Ruler, King George II. Flag, narrow blue and white stripes.

**Area and Population.**—The area is about 50,270 sq.mi., of which 41,652 sq.mi. are mainland and 8,618 sq.mi. islands; population (Dec. 1935): 6,839,000. In 1928 the population was 6,204,684, of whom 5,759,523 were Greek-speaking, 191,254 speaking Turkish, 81,984 "Macedonian," 63,200 Spanish. 5,961,529 belonged to the Greek Orthodox Church, which is the religion of state; 126,017 were Moslems. Elementary education is compulsory. The higher educational system is well developed.

Chief towns: Athens, pop. (1928) 392,731; Salonica, 236,524; Patras, 61,278; Kavalla, 49,980.

**History.**—In 1935 King George had been restored to the throne. General elections held in Jan. 1936 brought about a deadlock. On March 15 M. Demerdjis formed a Government; but on April 13 he died suddenly, and General Metaxas, deputy prime minister and minister of war, took his place. Parliament was prorogued, but a political amnesty was voted. There was, however, much unrest, due largely to the Communists, who had held the balance after the elections.

A general strike was called for Aug. 5. General Metaxas proclaimed martial law, suspended articles of the constitution guaranteeing the liberty of the subject, and dissolved the chamber. Since that date the press has been so strictly controlled that little news from Greece has penetrated abroad. General Metaxas has embarked on a program said to consist of social reform, the development of industry, and reorganization of defence.

In foreign affairs the chief note during 1937 was one of warm friendship for Turkey. The two premiers exchanged visits and messages of the utmost cordiality.

**Finance, Trade, and Communications.**—The monetary unit is the drachma, nominally equal to 1.298 gold cents; this had sunk by March 1937 to 40.7% of its nominal value. Greece has a heavy public debt, contracted both before and after the War. In 1936 the internal debt amounted to 12,346.9 million dr. and



the foreign debt to 35,016.8 million dr. The combined services amounted to 3,004.6 million dr. interest and 68.5 million dr. amortization. For some years Greece has been in default on her foreign debt. In 1936 she agreed to pay 40% of the interest due, but the council of bondholders expressed dissatisfaction. The balance of trade was heavily passive (1935, 10,681 million dr. imports, 7,101 million dr. exports); but there are large invisible imports.

The chief trade, both for imports and exports is with Germany and Great Britain. Industry, has, however, developed rapidly. The index of industrial activity for 1936 was 151 (av. 1925-29, 100). The budget for 1936-37 showed estimated receipts of 12,725.4 million dr. and expenditure of 13,285.6 million dr.

**Defence.**—Military service is compulsory and universal. The budgetary effectives of the army in 1936 numbered 5,187 officers and warrant officers and 52,680 other ranks (average). The navy consists of 1 battleship, 2 cruisers, 21 destroyers and torpedo boats, and 6 submarines. The navy is at present being re-equipped, largely from British sources, while in Jan. 1937 a contract was signed with Germany for a loan of 2,500 million dr. for war material.

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**Greenland**, the world's largest island (about 840,000 sq.mi., of which about 35,000 are ice-free), in the Arctic ocean, N.W. of Iceland, and a Danish possession; capital, Godthaab. Population (1930), 16,700, of whom 400 are Danes. The trade, which is a Government monopoly, is almost entirely with Denmark.

On April 8, 1937, Denmark took formal control of Thule, the most northerly inhabited place in the world, which since 1913 had been a kind of small independent commune. During the year it was announced that the pack-ice-free harbour of Faeringehaven, on the south-west coast, would be open for general navigation until Oct. 1941, and many fishing vessels have taken advantage of this new facility.

Exploration in the interior continues; new settlements are being made on the north-west coast; and the new openings for Greenland in the fields of trans-Atlantic aviation and the dissemination of meteorological information are making of importance a vast territory hitherto regarded as practically valueless.

**Greenough, Robert Battey** (1871-1937), American surgeon who established a national reputation for his work as a cancer specialist. Born in Cambridge, Mass., Nov. 9, 1871, he was graduated from the Harvard medical school in 1896. From 1909 to 1932 he served as assistant professor of surgery at that institution and from 1917 to 1929 was director of the Harvard Cancer Commission. He was also a consulting surgeon at the Massachusetts General Hospital and the Collis P. Huntington Memorial Hospital and chairman from 1929 to 1931 of the board of directors of the Society for the Control of Cancer. While serving as president of the American College of Surgeons during 1934-35 Dr. Greenough advocated the adoption of periodic pre-payment health insurance plans in various communities so as to provide adequate medical care for persons of average means. His death occurred in Boston, Mass., Feb. 16, 1937.

**Guadeloupe**, a French colony in the West Indies, including the island of Guadeloupe and several minor islands; language, French; capital, Basse-Terre. Governor, Félix Éboué. The area is 688sq.mi. The population was 302,659 (1936 census). The chief cities with populations in 1931 are: Basse-

Terre (9,268), Pointe-a-Pitre (30,465), and Le Moule (17,107). The colony is administered by a governor and an elected general council and is represented in the French parliament. In 1937, the French agricultural moratorium and labour arbitration laws of 1936 were extended by decree to Guadeloupe. Regular steamer service connects the colony with France and with the United States.

Imports in 1936 aggregated 125,459,000 francs in value, exports, 170,944,000 francs. The chief imports are foodstuffs, textiles, beverages, and lumber, with 65% supplied by France. Its chief exports, almost entirely to France, are bananas (49,672,400 francs value in 1935) and rum (33,603,300 francs value in 1935) and, of less importance, sugar and coffee. The island produces annually 35,000 metric tons of cane sugar, 10,000,000 litres of rum, and 26,000 tons of bananas.

There are 18 sugar mills and 94 rum distilleries. The French franc (value: 3.4¢ U.S.) is legal tender. There are over a hundred schools, including secondary and professional, with 10,000 pupils.

**Guam**, a possession of the United States of America and the largest and most populous island of the Marianas, lies at the southern end of that group, approximately 1,500 miles E. from Manila; area about 225 square miles; population on July 1, 1937, 22,132, including 20,662 natives of Guam who are called Chamorros; the remainder are foreign-born and personnel of the U.S. Naval Establishment. The capital and only city is Agana, having about one-half the total population of the island.

The island was discovered March 6, 1521, by Magellan and remained a Spanish possession until June 21, 1898, when it was captured by the United States, later being ceded to the United States by the Treaty of Paris. Since acquisition it has been under the jurisdiction of the Navy Department with a naval officer commissioned as governor by the president. The people are regarded as wards of the United States Government. Immigration, while not prohibited, is not encouraged and no alien may own land.

Public schools had an average enrolment of 4,527 during 1936-37. Emphasis is placed upon the English language, health and sanitation, and upon industrial and agricultural training. Health and sanitary conditions are very satisfactory. All medical attention is given by the naval medical officers who treat the people free of charge.

Hospitalization is also provided without cost. The only bank is the Bank of Guam, conducting a commercial banking business as a division of the Treasury of the Naval Government of Guam, which owns the capital stock. Copra is the only export of importance: 5,201,968 pounds were exported during the fiscal year 1937. The community is essentially an agricultural one. The land is fertile and native foodstuffs are plentiful. (O. M. H.)

**Guatemala**, a Central American republic; language, Spanish; capital, Guatemala City; President, Jorge Ubico. Guatemala (48,290 sq.mi.) had a population of 2,373,083 (1935 census). The leading cities are Guatemala city (116,000), Quezaltenango (35,000), Totonicapan (30,000), and Coban (27,000). On February 15, President Ubico began his second six-year term of office. In conformity with his famous "Law of Probity", which requires all office holders to file statements of personal assets upon entering and leaving office, he took the occasion to make public his own and his wife's personal accounts. Chaotic conditions in the world coffee market, accentuated by the Brazilian developments of Nov. 1937, caused considerable excitement in Guatemala late in 1937. In 1936 total imports were 11,511,947 quetzales, exports, 15,106,264 quetzales, with the United States



leading. Guatemala has 850 miles of railroads, 3,000 miles of highways. Steamship service and airways provide external communication. Coffee (annual production approximately 130,000,000 lbs.) is the chief product. Bananas, cabinet wood, and precious metals are also important, with some manufacturing for domestic consumption. The monetary unit is the quetzal (value: approx. 1.00 U.S.). Seven banks have total assets of 29,144,155.86 quetzales. The 1937 budget was balanced at 9,225,000. Marked advances in education have been made in recent years. The number of schools increased from 2,219 in 1935 to 2,476 in 1936, with an added enrolment of over 15,000. The 1937 budget allotted 1,230,000 to education, making the fifth successive year of continued increase. Guatemala has compulsory military service, and maintains a standing army of 7,000. (L. W. BE.)

**Guernica**, a small town in the province of Vizcaya, Spain, of about 7,000 inhabitants, at one time the capital and "holy city" of the Basque people. It became unhappily famous in April 1937 in consequence of its savage destruction on the 27th by aircraft attached to Gen. Franco's insurgent troops. The town was bombarded for 3½ hrs. by a fleet of aeroplanes of German type, and was almost completely destroyed by fire, save for the historic oak under which the Spanish kings formerly swore to uphold the democratic rights of the Basques, and the Casa de Juntas, where the Basque parliament once sat, and the archives of the race were preserved. The insurgent leaders denied that the destruction of the town was their work, or that they had any part in the raid, suggesting that Guernica had been bombed and fired by the Basques themselves in an endeavour to excite indignation against the insurgents. The town was occupied by insurgent forces on April 29.

On May 3, the insurgents admitted that a few of their bombs might have fallen on Guernica, but still maintained that the main work of destruction was not theirs; however world opinion remained unconvinced by these disclaimers. The Spanish Government in June gave the number of casualties in Guernica as 1,654 dead and 889 wounded.

**Guest, Frederick Edward** (1875-1937), P.C., C.B.E., D.S.O. British soldier and politician; born June 14, 1875, the third son of the first Baron Wimborne; died at Sunbury-on-Thames, April 28, 1937. He saw military service on the White Nile, 1900, in the South African War, and in the World War, being awarded the D.S.O. in 1917. Early in his political career he acted as private secretary to his cousin, Mr. Winston Churchill. After some unsuccessful attempts to enter Parliament, he sat as Liberal M.P. for East Dorset, 1911-12, Stroud, 1923-24, and North Bristol, 1924-29; and in 1931 he was elected as a Conservative for the Drake Division of Plymouth. He was Secretary of State for Air from 1921 to 1922.

**Huffey-Vinson Coal Act:** see COAL INDUSTRY; CONGRESSIONAL LEGISLATION; UNITED STATES: Congress.

**Huguenheim Fellowships:** see LITERARY PRIZES: United States.

**Guiana, French:** see FRENCH GUIANA.

**Guinea:** see FRENCH WEST AFRICA AND THE SAHARA; PORTUGUESE GUINEA; SPANISH WEST AFRICA.

**Guinea, Spanish:** see SPANISH WEST AFRICA.

**Gypsum.** The gypsum industry is so closely linked to the building industry, which uses most of the product, that the decline in building operations so prevalent during the depression years was seriously reflected by the gypsum industry throughout the world; but more so in the United States than elsewhere. The

peak of the United States output was 5,678,000 short tons in 1925, which had already declined to 5,016,000 tons in 1929; the decline continued to 1,536,000 tons in 1934, followed by a recovery to 2,713,000 tons in 1936, which is still less than half of the former high.

About one-quarter of the current output is used in cement manufacture in crude form, while 1% is used by agriculture as a soil addition and 3% goes to various minor uses; the remainder is calcined and, except for some 7% that is used in the glass and ceramic industries, is absorbed in the production of plasters, wall-board, and other building products. U.S. production is supplemented by imports, chiefly from Canada, to the extent of about 20% of the consumption. (G. A. Ro.)

**Gyroplanes:** see AVIATION, CIVIL: *Special Aircraft*.

**Hadley, Henry Kimball** (1871-1937), American composer and conductor, founder and honorary president of the National Association of American Composers and Conductors, was born in Somerville, Mass., Dec. 20, 1871. He composed four operas, three overtures, four symphonies, seven operettas and over 150 songs, piano pieces and cantatas during his lifetime. Among the orchestras which he conducted were the Seattle, San Francisco, Manhattan and Chicago Symphony Orchestras and he was an associate conductor of the New York Philharmonic Orchestra for seven years. While insisting upon the performance of American compositions as part of his programs, his own works were not typically American for he opposed all efforts to create a special school. He died in New York City, Sept. 6, 1937 after an extended illness. Additional information regarding his career is contained in the *Encyclopædia Britannica*, vol. 11, p. 65.

**Hadow, Sir (William) Henry** (1859-1937), C.B.E., British scholar and musician; born at Ebrington, Glos., Dec. 27, 1859; died in London, April 9, 1937. For a biographical notice, see *Encyclopædia Britannica*, vol. 11, p. 65. Sir Henry retired from the vice-chancellorship of Sheffield university in 1930. His later publications included: *Church Music* (1926); *Collected Essays* (1928); *English Music* (1931); and *Richard Wagner* in the Home University library.

**Hafid, Mulai** (—1937), ex-sultan of Morocco, died at Enghien-les-Bains, France, on April 4, 1937. For an account of his reign, see *Encyclopædia Britannica*, vol. 15, p. 818. After his abdication in favour of his brother, Mulai Yusef, Mulai Hafid lived in Spain and France.

**Haiti**, a West Indian republic occupying the western third of Hispaniola; language, French; capital, Port au Prince; president, Stenio Vincent. The area is 10,204 sq.mi. Population (estimate, 1936) 2,550,000. It is almost entirely negro. The chief cities are Port au Prince, 125,000, and Cap Haitien, 14,000. Haitian overpopulation and underdevelopment have in the past caused emigration for work in sugar plantations in Cuba and in the Dominican Republic. Early in 1937 the Cuban government transported a considerable number of them back to Port au Prince. In October a serious crisis with the Dominican Republic occurred, when Haitians living in that country were attacked by armed parties, instigated—so it was charged—by the Dominican president himself.

By an agreement of Oct. 15, the Dominican government, while minimizing the entire affair, undertook to conduct an investigation to fix responsibility. As continued incidents were reported, the Haitian government, on Nov. 12, appealed to Cuba, Mexico, and the United States to use their good offices and to mediate. The



Dominican government denied any such need, and, early in December, charged that counter-raids were being made. On Dec. 13, Haiti invoked the "Gondra treaty" of 1923 and subsequent Pan-American pacts which provided for permanent inter-American committees of investigation. According to official Haitian estimates, 8,000 Haitians had been killed and a greater number wounded. Unofficial, normally reliable estimates placed the total as "at least 10,000" killed. The year closed with considerable tension. Fifteen ports are open to commerce. There are 164mi. of railways and over 1,000mi. of motor highways. In 1936, imports totalled \$7,584,125 in value, chiefly from the United States (56.5%), with Great Britain (12.5%) second. Exports aggregated \$9,447,719 (coffee, 62%; cotton, 15.3%), chiefly to France (47.2%), Great Britain (15.1%), and the United States (14.24%). In 1937, exports declined, as a result of the instability of coffee. Haiti ranks fifth as a world producer of coffee. Cotton, sugar, and sugar products are also important.

The monetary unit is the gourde, fixed by law at 20¢ United States. The public debt on Nov. 30, 1937, was 43,418,702.07 gourdes, a reduction of over 4,000,000 in 12 months. Fiscal control is in the hands of a financial adviser nominated by the President of the United States. There are over 400 primary and secondary schools, with over 50,000 students. (L. W. BE.)

**Halévy, Elie** (1870-1937), French historian; born at Étretat, Sept. 6, 1870; died at Sucy-en-Brie, Seine-et-Oise, Aug. 21, 1937. A biographical note is to be found in the *Encyclopædia Britannica*, vol. 11, p. 90. The two volumes of his *Epilogue* to his famous *Histoire du peuple anglais au XIX<sup>e</sup> siècle* appeared in 1926 and 1932 respectively, and in an English translation, in 1929 and 1934 respectively. This work is held to be one of the best histories of the period 1815-1914, with the period 1841-95 left unfortunately uncovered at the time of Halévy's death. His other works include *The World Crisis, 1914-18*.

**Hammer Throw:** see TRACK AND FIELD SPORTS.



JOSEPH PLATAK, of Chicago, Ill., the world's greatest hand-ball player

**Hand-ball** continued its popularity during 1937 as one of the favourite pastimes among national sports in the United States. A large increase in the number of women players was noticeable. The classic event is the national four-wall championship, held every year. In 1937, the Lake Shore A.C. of Chicago was the host with entries representing all sections of the country. The winner in the singles, for the third consecutive year, was Joseph Platak of the home club. In the doubles Platak also scored teaming up with his club mate C. R. Weiller. National four-wall rankings for 1937 are as follows:

#### Singles

1. Joseph Platak, Chicago
2. Sam Atcheson, Memphis
3. Jack Schwartz, Baltimore

#### Doubles

1. Joseph Platak and C. R. Weiller, Chicago
2. Joseph Gordon and Andy Berry, Los Angeles
3. Frank Coyle and Edward Linz, New York A. C.

Many sectional championships are held during each year in the leading centres to provide the best competition in the four-wall sport, with organizations such as the New York Athletic Club, in the East, the Los Angeles A.C. and Olympic Club (San Francisco) in the West, and the Lake Shore A.C. in the Middle West setting the pace.

There is considerable interest manifested in the one-wall game, which is played almost exclusively in the East. New York city has been the scene of all the national tournaments in this branch of the game and is considered to have the best players in the country. National one-wall ratings follow:

#### Singles

1. Harry Goldstein, New York
2. David Margolis, New York
3. George Baskin, New York

#### Doubles

1. George Baskin and Harry Goldstein, New York
2. Morton and Seymour Alexander, New York
3. Samuel Feuer and Marvin Hecht, New York

#### Women's Rankings (one-wall only)

1. Lucy Caruso, New York
2. Helen Lohman, New York
3. Mrs. Hannah Kaufman, New York

(FR. RO.)

**Hapgood, Norman** (1868-1937), American editor, was best known for his crusading editorials during the early years of the 20th century. He was born in Chicago, March 28, 1868, and received his arts and legal degrees from Harvard in 1890 and 1893. After practising law for a year, he joined the staff of the *Chicago Evening Post*. He later served as reporter for *The New York Evening Post* and as dramatic critic for *The New York Commercial Advertiser*. As editor of *Collier's Weekly* from 1903-12, his editorials were influential in overturning the dictatorial control of Joseph G. Cannon, speaker of the House of Representatives. He also helped expose the land-grab scandals of the Taft Administration and led one of the first crusades for pure food and drugs. On becoming editor of *Harper's Weekly* in 1913, he actively supported the policies of Woodrow Wilson and was rewarded in 1919 with the post of U.S. Minister to Denmark. His editorship of *Hearst's International Magazine* during 1923-25 was marked by war on the Ku Klux Klan and he joined Henry Moskowitz in writing a biography of Alfred E. Smith entitled *Up from City Streets* (1927). His other publications included *Literary Statesmen* (1897), *Daniel Webster* (1899), *Abraham Lincoln* (1899), *The Stage in America* (1901), and *Industry and Progress* (1911). He died in New York city, April 29, 1937.

**Harlow, Jean** (Harlean Carpenter) (1911-1937), American motion picture actress, whose death at twenty-six years of age brought a sensational career to a sudden close. Born in Kansas City, Mo., March 3, 1911, she was educated at schools there, in Hollywood, and in Chicago. In *Hell's Angels*,



roduced in 1930, Miss Harlow's unusual blond hair started the "platinum blond" fad. At twenty-one she obtained her first starring vehicle, *Red Headed Woman*. By 1935 she was a leading box-office attraction, drawing \$3,500 a week for her work for Metro-Goldwyn-Mayer. Her most important pictures were *Public Enemy*, *Dinner at Eight*, and *Labeled Lady*. Her death occurred in Hollywood, June 7, 1937.

**Arper Prize Novel:** see LITERARY PRIZES: *United States*.

**Harvard University**, oldest institution for higher education in the United States, completed the first year of its fourth century during 1937. At the end of the fiscal year, June 30, 1937, investments exclusive of land, buildings and contents stood at \$144,865,521. Gifts during the year were \$5,193,462 for capital account and \$1,518,052 for immediate use. Scholarships and other student aids totalled \$619,640. The year, 1937-38, began with an enrolment of 8,138 full time and 1,773 part time students, and President Conant announced in his annual report that any substantial increase would be opposed in favour of a more careful selection of entrants. The staff of 1938 included three new deans, James M. Landis of the Law School, Harald M. Westergaard of the Graduate School of Engineering and John H. Williams of the Graduate School of Public Administration.

The organization of the Graduate School of Public Administration, made possible by gifts from Lucius N. Littauer, was the outstanding development of 1937. During the early months exploratory conferences were held and in September a trial session was initiated with plans for starting regular work in 1938. Construction was begun on a building to house the school on the site of the Hemenway gymnasium, a landmark whose name will be retained in a new but smaller athletic centre.

Other developments during 1937 were the raising of entrance requirements in the Law School, the liberalization of rules for the choice of studies to aid in the selection of fields for specialization and steps taken in the administration of gifts for botanical research and journalistic training. In his annual report President Conant urged that the number of unrestricted gifts be increased only 16% in five years being without restriction) and urged establishment of a centre for students in the graduate schools. The Harvard university library, largest university library in the world, had 3,863,050 volumes and pamphlets on June 30, 1937, an increase of 67,448 over the previous year.

**Hopkins, Charles Homer** (1870-1937), American mediaevalist, who served as dean of the Harvard graduate school from 1900-1931, was born at Meadville, Pa., Dec. 21, 1870. After graduating from Johns Hopkins in 1887, he taught at Johns Hopkins, Wisconsin, and Harvard. Among his publications were *The Renaissance of the Twelfth Century*, *Studies in Mediaeval Culture*, *Studies in the History of Modern Europe*, *Norman Institutions*, *The Normans in European History*, and *The Rise of the Universities*. In addition to this work, for which he received many awards in both the United States and Europe, he served as chief of the Division of Western Europe of the American Commission to Negotiate Peace in 1918 and as a member of the Committees on Danish and Belgian Affairs and on Alsace-Lorraine and the Saar at the Paris Peace Conference.

He refused the presidency of Johns Hopkins university in 1911, preferring to remain at Harvard. He died in Cambridge, Mass., May 14, 1937.

**Hats for Women:** see FASHION AND DRESS: *Hats*.

**Hawaii.** The Territory of Hawaii consists of a group of eight larger islands and numerous islets in the Pacific ocean between latitudes 18°55' and 22°15' north and between 154°50' and 160°30' west longitude. Their total area is 6,438 square miles. The islands are of volcanic origin. From south-east to north-west, they are Hawaii, Kahoolawe, Maui, Lanai, Molokai, Oahu, Kauai, Niihau. In addition, stretching north-westward beyond Niihau over 1,100 miles is an archipelago of rocks, reefs and shoals which includes Midway (longitude 177°22' west) recently notable as the first stop beyond Honolulu of the trans-Pacific clipper planes. Likewise, 960 miles south of Honolulu and a part of the city and county of Honolulu lies Palmyra, a coral atoll consisting of fifty-five islets, five miles long and two and a half miles wide. The youngest island, geologically, and the largest in the group is Hawaii, with an area of 4,030 square miles.

The capital of the Territory is Honolulu, situated on the island of Oahu. It is a completely modern city with a population (1930 census) of 137,582. Oahu is the scene of the United States' strongest fortifications in the Pacific. Hawaii's population of 368,336 in the 1930 census is estimated at approximately 400,000 in 1937. The racial origin of this population, in addition to the native Hawaiians and Caucasians from the mainland, is Japanese, Chinese, Korean, Filipino, Portuguese. 81% of the population, however, is native born; immigration into the Territory except for citizens from the American mainland, has ceased.

The governor and Territorial secretary are appointed by the President. Otherwise the Territory is wholly self-governing. It elects to Congress every two years a delegate who has a voice in the House of Representatives but no vote. The governor in 1937 was Joseph B. Poindexter; and the delegate, Samuel W. King. The Territory collected in taxes and fees \$13,242,666 in 1937 and expended \$12,021,679. In addition, Federal taxes were paid into the U.S. Treasury of \$11,633,487.56, exceeding the payment of seventeen States of the Union.

**Agriculture.**—Hawaii's chief crops are sugar and pineapples. Expert management, scientific methods and costly irrigation works have raised the sugar production to a maximum of 1,035,548 tons in 1933 with a value of \$66,482,181. This output was subsequently reduced as a result of quota limitations established under the Jones-Costigan Act. The pineapple industry, next in importance, reached in 1937 a maximum of 879,641,271 lbs. with a value of \$59,395,090. Other agricultural crops are coffee, macadamia nuts, papayas and taro, a root used by the natives in making the native "poi" and also now being processed into flour.

The tourist industry has developed rapidly in the last two decades, reaching a total of over 55,860 tourist visitors in 1937. One characteristic of Hawaii, unique among all regions under the American flag, is that there are no billboards. (E. GRU.)

**Hawthornden Prize:** see LITERARY PRIZES: *Great Britain*.

**Hay.** Production of both tame and wild hay in the United States was placed at 83,087,000 tons from 66,344,000 ac. by the Department of Agriculture. This shows a substantial increase over the previous year (1936) when 70,386,000 tons were harvested from 67,868,000 acres. For the country generally the supply of hay and roughage is ample. Areas in which there is a light supply include North-east and Central Montana, the Western third of the Dakotas, a large part of Kansas and Nebraska, the Eastern third of Colorado, the Western half of Oklahoma, parts of North and West Texas, South-west Iowa and North-west Missouri, and parts of New Mexico which lacked adequate rainfall again in 1937. The increased use of mechanical corn pickers and combines has reduced the supply of roughage ordinarily conserved in some areas. The average yield of both tame and wild hay in 1937 was 1.25



tons per acre as compared with 1.04 tons in 1936. All production of tame hay in 1937 totalled 73,785,000 tons, with an average yield of 1.37 tons per acre. In 1936 the tame hay crop was 63,536,000 with an average of 1.11 tons per acre. The tame hay acreage harvested in 1937 was 54,792,000 ac., as against 57,289,000 ac. in 1936. The 1937 crop of wild hay was 9,302,000 tons at an average yield of .81 tons to the acre, from 11,552,000 acres. In 1936 wild hay production was 6,850,000 tons, with an average of .65 tons to the acre, from 10,579,000 acres. The alfalfa acreage was approximately 14,000,000 ac. in both 1937 and 1936 and exceeded the five-year average of 11,720,000 acres. (See ALFALFA.) The five-year average for all tame hay is 70,146,000 tons from 55,153,000 acres. For wild hay the five-year average is 10,719,000 tons from 13,288,000 acres.

(S. O. R.)

**Hayashi, Senjuro** (1876– ), Japanese general, son of Shishiro Hayashi, samurai, born in Ishikawa Prefecture. He has been director-general of the Military Training Department, War Ministry, 1932–34, Minister of War, 1934–35, Premier, Feb.–May, 1937. As War Minister General Hayashi endeavored to curb the more extreme groups among the younger officers, who held socially radical ideas. He felt morally obliged to resign, however, after one of his chief assistants, General Tetsuzan Nagata, had been murdered by a nationalist fanatic, Lieut.-Col. Saburo Aizawa, in Aug. 1935. General Hayashi reappeared on the political scene when he was appointed premier after a cabinet crisis in Jan. 1937. His predecessor, Mr. Koki Hirota, the present Foreign Minister, had resigned; and opposition from the army blocked the formation of a cabinet by General Kazushige Ugaki, who had first been entrusted with this task. At the end of March General Hayashi abruptly dissolved the Diet, accusing the legislators of not paying sufficient attention to their duties. The subsequent election was held under rather peculiar conditions, because both of the main parties, the Minseitō and the Seiyukai, had been criticized by Hayashi, and no political group of any size supported the premier. The results of the election revealed only minor changes in the composition of the new Diet and seemed to promise a deadlock between the premier and the Diet. This was avoided, however, because General Hayashi's cabinet resigned on May 31, giving way to a cabinet headed by Prince Fumimaro Konoye (*q.v.*). (W. H. CH.)

**Hayden, Charles** (1870–1937), American financier who as senior partner of Hayden, Stone & Company became a leading figure in Wall Street. Born in Boston, Mass., July 9, 1870, he was graduated from the Massachusetts Institute of Technology in 1890 and two years later organized in Boston with Galen L. Stone the banking firm of Hayden, Stone & Company. In 1906 the firm opened its New York office. Mr. Hayden extended his influence over many American industries, serving as chairman of the board of directors of the Chicago, Rock Island & Pacific Railway and the International Nickel Company, as chairman of the executive committee of the Cuba Cane Sugar Corporation, as chairman of the finance committees of the Kennecott, Utah, Nevada and Ray Copper Companies and as a member of the executive committee of the American Locomotive Company, Mack Trucks, Inc., Otis Elevator Company and Brooklyn-Manhattan Transit Company. The most noteworthy of his numerous benefactions was the planetarium bearing his name, for which he donated to the American Museum of Natural History in 1934 the sum of \$150,000. In 1933 he directed at President Roosevelt's request the Boy Scout Maintenance Fund campaign and in 1935 was appointed chairman of the Research Association of the Massachusetts Institute of Technology. He died in New York City, Jan. 8, 1937.

## Heart and Heart Diseases.

The greatest advance in our knowledge of circulatory disease lies in the present and future study of the causes of such disease, with especial view to their prevention. There are constantly new developments in our understanding of the way in which the heart and blood vessels are affected by all kinds of factors, and slight progress here and there has also been made in diagnosis, prognosis, and treatment. No outstanding discovery has been announced in the last year.

**Anatomy and Physiology.**—It is becoming more and more evident that the normal limits of heart size and rate and efficiency vary widely, making it very difficult to follow accurately as yet any set tables according to age, height, weight, or other easily calculated data. Family trends, the state of health, and physical training play important rôles not yet adequately recognized by those who are following limited criteria in the establishment of normal measurements, both anatomical and physiological, as for example in various tests of cardiovascular function and in X-ray studies. An illustration of this is in the determination of heart volume by X-ray (orthodiagraphy or teleroentgenography); although there is a gradually ascending curve according to body size there are wide limits of the normal range of heart volume for each body size and age. In other words we must still assess each individual case according to all the factors that we possess until such future time as we may have available adequate nomograms on which we may rely.

Anatomically and physiologically three interesting advances have been made in relation to the blood vessels. Winternitz of Yale has discovered by delicate injection methods that the walls of some arteries are rich in minute nutrient vessels, called vasa vasorum; it has long been known that such small vessels exist, but it was not realized that they were so numerous. The contention that their presence may play a major rôle in the production of arteriosclerosis as the result of minute haemorrhages in the arterial walls has not, however, been proved. The other advances concern the veins and the lymphatics respectively, two parts of the circulation which have been relatively neglected. Edwards has studied the valves in the veins, and their position and action in detail, and, like Homans, has taken particular interest in measures, especially muscular exercise, which tend to prevent stagnation, infection, and thrombosis which may lead to serious embolism in the lungs, a condition which has apparently been on the increase in late years. Drinker has continued his study of the lymphatics and has found that they play an important rôle in tissue repair, the limitation of disease processes, and in the chemical and water balance in the body.

Further studies in cardiovascular physiology have made clearer the reflex sympathetic control of blood pressure by the mediation of certain sensitive areas in arteries and veins, particularly in the carotid sinus, aortic arch, pulmonary artery and veins, vena cava, mouths, right auricle, and mesenteric arteries. Also the speed of blood flow and the volume of circulating blood have been shown to be influenced by congestive heart failure, the speed decreased and the volume increased.

**Methods of Cardiovascular Examination** have developed slowly. The first two authoritative books on X-ray of the heart in the English language have been published this year, one by Hugo Roesler and the other by Chester Kurtz. Electrocardiography has come more firmly into its own with the final adoption of a routine chest lead in addition to the classical limb leads, and the realization of its great value in revealing otherwise concealed disease of the coronary arteries—a reason for routine electrocardiography by insurance examiners in the case of men of middle age or older who apply for large sums.

**Diagnosis of Heart Disease.**—The idea that the etiological



gnosis of heart disease is more important than the structural or functional diagnoses has spread apace and has proved of great value; it has helped, for example, in the understanding of rapidly developing enlargement and failure of the heart that may sometimes result from severe rheumatic fever or extensive coronary thrombosis. More analyses are being made and reported of the relative incidence of the various kinds of heart disease in various parts of the world, a vital step in the advance of our knowledge that is no more important than studies of their absolute incidence which still remain to be done. Not only may such studies help indicate the magnitude of the problem of heart disease but they are almost certain to reveal important clues as to the pathogenesis and eventual reduction of the most important causes, which are the rheumatic infection, high blood pressure, and arteriosclerosis, especially as it involves the coronary arteries. Congenital heart disease and certain other of the rarer types like pulmonary heart disease and nutritional disease have received special attention in the past year and are being removed from the remote and mysterious subjects which they once were.

**Treatment.**—The major interest in treatment is beginning to be diverted, as it should be, from zealous attempts to give relief to advanced heart disease and heart failure by radical and sometimes most bizarre methods to the more justified zealous attempts to treat the causes at their inception and to establish simple health measures in the case of cardiac patients which may retard increase of heart disease and postpone heart failure. Already a decrease is obvious in certain more enlightened parts of the world in the incidence of cardiovascular syphilis, hitherto a major problem, and of thyrotoxic heart trouble. No new drugs of importance have been introduced. Reparative surgery of heart and pericardium continues to advance with occasional cures of cases that would formerly have perished or have lived hopelessly crippled lives. (For statistics see PUBLIC HEALTH SERVICES.)

(P. D. W.)

**Eat and Heating:** see PUBLIC HEALTH ENGINEERING.

**Heavy Hydrogen** is the name applied to the isotope of the element of atomic number 1, having mass approximately two units. It has been given the name deuterium, and its nucleus is called the deuteron, two terms which are analogous to the names protium and proton for the atom and nucleus of the lighter isotope. The latter two terms are used but seldom, in general the lighter variety being referred to by the term hydrogen. The atomic weights of protium and deuterium are 1.0081 and 2.0148, respectively. The spins of the proton and deuteron are  $\frac{1}{2}$  and 1, and the magnetic moments 3.25 and 0.75 nuclear Bohr magnetons, respectively. The ratio of the abundance of hydrogen to that of deuterium in terrestrial sources is about 5,750, but up to the present deuterium has not been found in the sun. It appears that its large abundance on earth is due to some fractionation process such as the loss of the atmosphere of the earth when it was first formed, resulting in an increased concentration of deuterium in the residue. This suggestion is in accordance with our belief that the abundance of hydrogen on the earth is much less than its cosmical abundance.

Deuterium is separated from protium by the electrolytical method discovered by Washburn. This has proved to be the most efficient method for the separation of this isotope, though the distillation and diffusion methods have both been used with success. "Heavy water" or deuterium oxide is now manufactured commercially and is an article of commerce.

Since the discovery of deuterium in 1931 and particularly since its successful preparation in nearly a pure form in 1933, an enormous amount of experimental information has accumulated.

These data cover the fields of spectroscopy, the thermodynamics of isotopic compounds of hydrogen and deuterium, physical properties including the electric, magnetic, mechanical, optical, and thermal properties, and the use of deuterium in chemical kinetic studies of many kinds. Also, the biological effects of deuterium oxide have been investigated and deuterium has been used widely as a tracer in the study of intermediary metabolism. Among the most interesting applications is the field of transmutation reactions.

In the field of spectroscopy it has been found that current ideas of the dependence of spectra on the mass of atoms have proved to be correct in every respect where deuterium has been used to test such theories. This has proved to be true in the case of the molecular spectra of  $H_2$ ,  $HD$ , and  $D_2$ , and in general of the molecular spectra of diatomic hydrides.

In the case of polyatomic molecules the theory has not been so well understood and deuterium has here served to unravel many difficult points about the structure and spectra of molecules of these different molecules. In the field of thermodynamics again there are many cases of confirmation of previously known theory and an accumulation of a large amount of data where the theory is not so well understood. For the most part the large accumulation of data on physical properties still remains unorganized from the theoretical standpoint though some attempts have been made in this direction.

Deuterium has proved to be very valuable in the study of chemical kinetics. This is an interesting field of chemistry since the speed with which chemical transfers take place is an important consideration in the study of that science. It is also a field of very great difficulty because of the very complex character of chemical reactions and the really detailed information that is required for its understanding. The study of exchange reactions involving hydrogen, *i.e.*, reactions in which two compounds, say one containing light hydrogen and the other heavy hydrogen, exchange their isotopes, is a very simple type of chemical reaction which has helped to elucidate the mechanisms of many chemical reactions.

The use of deuterium as a tracer in biochemical studies has been important. Deuterium is not an entirely ideal tracer because its chemical properties are somewhat different from those of hydrogen and hence there is no certainty that once the course of compounds containing heavy hydrogen in animal organisms has been followed, that this is also precisely the course of compounds containing the light hydrogen.

The deuteron has been found to be one of the most effective projectiles used in modern high voltage machines for transmutation of elements. The bombardment of deuterium oxide with deuterons gives the most intense source of neutrons known at the present time. Also, high speed deuterons are most effective projectiles for other transmutations.

(H. C. U.)

**Heavy Nitrogen:** see ISOTOPES OF THE LIGHTER ELEMENTS, SEPARATION OF.

**Hejaz:** see ARABIA.

**Helicopter.** The word "helicopter" is used to define a heavier-than-air aircraft which lifts and flies on wings which rotate under power of a contained motor. Under this definition, the wings of the helicopter may rotate in a radial cycle about a vertical axis or in a cylindrical cycle about a horizontal transverse axis.

Up until 1937 all efforts to develop a successful helicopter resulted in partial or complete failure. In 1916, partially successful flight tests were made with the captive helicopter developed by Petroczy and von Karman (Austria). This machine, with two 20-ft. concentric radial two-bladed airscrews, rose vertically to a



height of 160 feet. Other partially successful helicopters were produced by Henri Breguet (France), Henry Berliner (U.S.), de Bothezat (U.S.), Etienne Oehmichen (France), Pescara (Spain), and von Baumhauer (Holland).

The most successful helicopter to date is the Focke-Wulf Fw. 61 (Germany). This machine, with two 23-ft. diameter three-bladed radial rotors turning about vertical axes arranged laterally on each side of the fuselage, flew on June 25-26, 1937, a total distance in closed circuit of 122.553km. (76.105mi.) at a speed of approximately 76m.p.h. Duration of flight was 1hr.20min.49sec.; altitude reached, 2,500 metres (8,200ft.).

Many believe the helicopter-type of flying machine has great promise in the efforts to improve safety, reliability and convenience of aviation.

(W. L. LEP.)

## Hemp

(FIBRE). Production of hemp fibre attracted attention as an economy crop in several countries where its admixture in the manufacture of textiles was officially ordered as a means of reducing purchases of cotton imports. The Greek Government decreed that an effort be made to develop hemp growing in that country and that 1,500ac. be planted to hemp in 1938. The Greek acreage was 200ac. in 1937. New methods of utilizing hemp waste are said to have been developed, including a process for the manufacture of hemp-waste wallboard, which can be used in building construction or stored as a cellulose supply for the manufacture of high explosives, just as wood pulp cellulose is stored for war purposes. Hemp fibre crops in the principal producing countries in 1937 were given as follows by the International Institute of Agriculture, the figures in parentheses being for 1936: Italy, 237,741,000lbs. (192,372,000). Germany, 14,872,000lbs. (9,929,000). Czechoslovakia, 10,694,000lbs. (12,711,000). France, 9,192,000lbs. (9,466,000). Bulgaria, 8,488,000lbs. (7,288,000). Austria, 176,000lbs. (184,000). No figures of the Russian crop, which is reported to be large, have been given out by the Soviet Government, although the present five-year plan is said to have called for the planting of 1,511,000ac. to hemp fibre in 1937. Russia's average annual production of fibre was 367,992,000lbs. for the five years ending in 1935. No figures for the Yugoslavia harvest are available, although the acreage planted was 141,000, a slight increase over 1936 when production was 114,532,000lbs.

**Hempseed.**—The production of hempseed is given by the Institute as follows: Germany, 11,089,000lbs. (7,604,000). Bulgaria, 9,714,000lbs. (5,325,000). Czechoslovakia, 7,477,000lbs. (8,379,000). Italy, 6,100,000lbs. (7,758,000). Austria, 132,000lbs. (127,000).

(S. O. R.)

## Heney, Francis Joseph

(1859-1937), noted American criminal prosecutor, was born in Lima, N. Y., March 17, 1859. His family moved to San Francisco when he was very young and it was as Attorney-General of Arizona Territory that he first established his reputation. In 1903 he gained national attention by his successful prosecution of Oregon land frauds involving several prominent officials. Five years later, he climaxed his career by securing the conviction of both San Francisco's mayor and political boss on charges of graft. After unsuccessful efforts to secure elective office, he turned to private practice in 1918. His death occurred at Santa Monica, Cal., Oct. 31, 1937.

## Hepburn, Mitchell Frederick

(1896- ), Premier of the Province of Ontario, Canada, was born at St. Thomas, Ontario, Aug. 12, 1896, the son of William Hepburn and Margaret Fulton, both Canadian born. He was educated at St. Thomas Collegiate Institute, spent three

years on the staff of the Canadian Bank of Commerce, and served overseas with Royal Air Force in 1918. Mr. Hepburn was first elected to the House of Commons in 1926 and was re-elected in 1930. In the same year he was chosen leader of the Ontario Provincial liberal party and when that party was returned to office at the general election, June 19, 1934, became Premier.

During 1937 Mr. Hepburn took an active part in opposing the entry of the Committee for Industrial Organization into Ontario labour ranks. This was the outcome of a strike of 3,700 motor workers at Oshawa, Ontario, on April 8. On April 14 Labour Minister David Croll and Attorney-General A. W. Roebuck of Mr. Hepburn's cabinet resigned in protest against this policy. Mr. Hepburn also stated that the Federal Government was not supporting his policy. Refusing to deal with the Committee for Industrial Organization representatives, he intervened in the strike and a settlement was reached on April 22. Largely on this policy he appealed to the people and was returned to office on Oct. 6 with 63 seats out of 90.

The breach between the Federal Ministry and Mr. Hepburn was further widened when in December the Prime Minister, Mr. Mackenzie King, deferred for consideration of Parliament a request for a licence to export power from Ontario to the United States.

(J. T. C.)

## Heredity.

More than a thousand papers concerning heredity were published in 1937, it is estimated, and these were in at least ten different languages. Under these circumstances all that can be attempted here is to select a few results that appear to be more important.

Snyder and Davidson have found that diphenylguanidine has a bitter taste to about 75% of the people tested, but is tasteless to the remaining 25%. Tasting appears to depend on a single dominant gene that is independent of the previously known gene for tasting phenylthiocarbamide. There is thus added a new member to the small list of widely distributed and easily classified genetic differences in man, and on such additions depends the chief hope of an adequate analysis of human heredity. Sonneborn has shown that clones of *Paramecium* may be classified, according to their conjugation reactions, into what must be considered different sexes. There results a technique for studying the genetics of this form that will certainly revolutionize our knowledge of heredity in the Protozoa. There is already reason to suppose that the principles worked out for higher organisms will apply with relatively little modification.

Blakeslee reports that a doubling of the chromosome number may be induced, in somatic tissues of a wide variety of plants, by treatment with dilute solutions of colchicine. Owing to the well known importance of polyploid forms in horticulture, a technique for their artificial production at will should be of great practical, as well as theoretical, value.

Numerous papers have appeared that deal with the developmental effects of genes. The results of tissue and organ implantations in *Drosophila* (Beadle, Ephrussi, and others), *Ephesia* (Kühn and others), the silkworm (*Kikawa*), and fowls (Willier and Hadorn), may be especially mentioned here. These studies may help in an attack on the manner of action of genes. In this connection geneticists are also interested in the recent biochemical advances in the study of proteins, enzymes, viruses, bacteriophage, and essential growth substances (vitamines, auxins, etc.).

The application of the methods and principles of genetics to the study of evolutionary problems has advanced during the year. Outstanding here is Wright's development of a general formula representing the effects, on mixed populations, of mutation, selection, migration, and inbreeding. Another important event is the publication of Dobzhansky's book *Genetics and the origin of spe-*



es, which gathers together for the first time the newer mathematical developments, the pertinent facts from genetics and cytology, and a mass of material from the field study of organisms under natural conditions.

The relation of the chromosomes to heredity has long been recognized, and has stimulated a vast amount of microscopical study of the chromosomes. The present year has seen a large number of publications in this field, dealing largely with the nature and structure of the salivary gland chromosomes of the Diptera, with the details of meiotic behaviour especially in structural hybrids and especially in plants, and with preliminary cytological surveys of new groups of organisms. (See GENETICS.) (A. H. St.)

**Hertzog, James Barry Munnik** (1866– ), South African barrister and statesman. A biography may be found in the *Encyclopædia Britannica*, vol. 11, p. 527. He has been prime minister from 1924 and minister of external affairs since 1929, and leader since its formation in 1934 of the United South African National party.

Gen. Hertzog, as representative of the Union of South Africa, attended the coronation ceremonies in London in May 1937, and the subsequent Imperial Conference; on his return he stated that the Imperial Government had failed to keep its promise regarding the handing over of the native territories to the Union, but it was later agreed that there had been a misunderstanding on this point. In September, opening the Government campaign before the 1938 elections, Gen. Hertzog made an important speech at Pretoria dealing with his country's relations to Europe and international politics; deploring the continuance of "wartime" psychology among European statesmen and peoples; and, while emphasizing his party's intention to promote native happiness, asserting that the native would be given no authority within or over the Government of the country.



MUSOLINI, Benito Mussolini, and his neighbour, Der Führer, Adolf Hitler

**Hetch-Hetchy Dam:** see AQUEDUCTS.

**Highways:** see ROADS AND HIGHWAYS.

**"Hindenburg":** see DISASTERS.

**Hispanic America:** see LATIN AMERICA.

**Hispaniola:** see DOMINICAN REPUBLIC; HAITI.

**Historical Association, American:** see AMERICAN HISTORICAL ASSOCIATION.

**Hitler, Adolf** (1889– ? ), German statesman, was born at Braunau on the Inn in Austria on April 20, 1889. After residence in Vienna where, as a painter, he formed his anti-Marxian and anti-Semitic convictions, Hitler moved to Munich in 1912. Here, in August, 1914, he enlisted as a volunteer in a Bavarian regiment and fought throughout the World War. In July, 1919, at Munich he joined as "Number 7" Anton Drexler's German Workers' Party, which soon developed into the National Socialist German Workers' Party, popularly known as the Nazis (*q.v.*). Hitler quickly became its Leader (*Führer*) and for a time edited its official newspaper, the *Völkischer Beobachter*. In the so-called Munich Beer Hall Putsch of Nov. 9, 1923, Hitler attempted with Ludendorff, Göring, Frick, Streicher, Röhm and others to seize the Bavarian Government, but was arrested, tried for treason, and condemned to imprisonment at Landsberg. Here he dictated to his secretary, Rudolf Hess, his famous book, *My Struggle* (*Mein Kampf*), of which more than two and a half million copies were later sold, thus providing the author with an abundant income. It is in part an autobiography and in part an exposition of his ideas for the regeneration of Germany, and is hence sometimes called the "Nazi Bible." On his release from prison in December, 1924, as a result of a general amnesty, he devoted himself to building up various organizations to strengthen the Nazi party: Brown Shirts (*q.v.*), Elite Guard (*Schutz-Staffeln* or "SS"), Hitler Youth (*Hitler Jugend*) and other formations. With the aid of these, with efficient lieutenants, and with his magnetic oratory, his Nazi party grew rapidly in power, winning 12 Reichstag seats in 1928 and 230 in July, 1932. On Jan. 30, 1933, Hitler was appointed Reich Chancellor and began the social and political revolution establishing the "Third Reich." Upon Hindenburg's death on Aug. 1, 1934, Hitler succeeded him as president, but modestly refrained from using the title and is known simply as Reich Leader (*Führer*) and Chancellor. For events in Hitler's career from 1934 to 1937 see BERLIN; GERMANY; NATIONAL SOCIALISM. (S. B. F.)

**Hobson, Richmond Pearson** (1870–1937), American naval officer, who became a hero of the Spanish-American War because of his attempt to trap the Spanish fleet in Santiago harbour by sinking the collier "Merrimac" in the harbour mouth. On leaping from the wreck he was captured and imprisoned for more than a month in a Spanish fortress. His heroism was rewarded with the Congressional Medal of Honor. He resigned from the Navy in 1903, but his championship of naval supremacy in *America Must Be Mistress of the Seas* in 1902 was continued in *The Paramount Importance of Immediate Navy Expansion* of 1904. From 1907–15, he represented the 6th Alabama District in Congress and as a strict prohibitionist helped to organize the American Alcohol Education Association. He was born at Greensboro, Ala., Aug. 17, 1870, and was graduated from the U.S. Naval Academy in 1889. He died in New York City on March 16, 1937.

**Hockey:** see FIELD HOCKEY; ICE HOCKEY.

**Hodge, John** (1855–1937), British trade unionist and politician; born at Muirkirk, Ayrshire, Oct. 29.



Very early in life he formed, at Motherwell, the nucleus of the British Steel Smelters' Association, and in 1917 was active in the formation of the British Iron, Steel, and Kindred Trades Association and of the Iron and Steel Trades Confederation. He became president of both the Associations and of the Confederation, retiring in 1931. He unsuccessfully contested Gower, 1900, and Preston, 1903, before being returned to Parliament in 1906 as Labour member for Gorton. In 1915 he was elected vice-chairman of the Parliamentary Labour Party, and in the second Coalition Government he was Minister of Labour, 1916-17 (being the first occupant of this new post), and Minister of Pensions, 1917-19. In 1916-17 he served on the Mesopotamia Commission to enquire into the conduct of the Turkish campaign. He published in 1931 an account of his visit to King George V and Queen Mary under the title *Workman's Cottage to Windsor Castle*. He died at Bexhill, Sussex, Aug. 10, 1937.

**Hogs.** In the United States there was an increase from 42,948,000 to 44,418,000. For the first time in three years U.S. pork and lard exports increased, being above \$26,300,000 for the year, compared to \$26,005,000 in 1936. They were \$160,833,000 in 1929. Slaughter of hogs and pigs in the United States in 1937 was 31,400,000 compared to 36,055,000 in 1936 and a five-year average of 45,991,000. The severe droughts, which in several years since 1930 greatly reduced the number of hogs in the U.S. are still perceptible in effect. Hog prices in the United States in 1937 declined about 46% from midsummer to December, or from \$13 to \$8. During the year the United States imported 74,830,480lbs. of pork, compared to 41,843,011 in 1936. Of this 2,337,000lbs. was bacon and 17,368,000lbs. other pork from Canada. The number of hogs in Europe declined during 1937 in most important producing countries, excepting Czechoslovakia and Hungary, following a large increase in 1936 and then higher feed prices in the first half of 1937. Denmark was said to be unable to supply its demands from the United Kingdom and other countries owing to a shortage of hogs, which on Nov. 20 were reported to number 2,918,000, compared to 3,516,000 in Nov., 1936. The German hog census of Sept. 4 showed 25,393,000 hogs, which was 2.4% below 1936, owing to the marketing of brood sows. The Government-controlled market in Germany gives a premium of 2.2 cents a pound for hogs weighing more than 300lbs. as compared to hogs weighing less than 200 pounds. Seasonal variation in prices are also fixed to encourage farmers to carry hogs through the winter and thus maintain a steadier supply for summer markets. The number of hogs in England and Wales decreased from 3,803,800 in 1936 to 3,632,300 in 1937; in Canada, from 4,145,000 to 3,963,000. (See also LIVESTOCK.)

(S. O. R.)

**Holland:** see NETHERLANDS.

**Home Building, Federal:** see FEDERAL HOME LOAN BANK SYSTEM; HOUSING.

**Honduras,** a Central American republic; language, Spanish; capital, Tegucigalpa (pop. 50,000); President, General Tiburcio Carías Andino. The area is 46,332 square miles. Population by the 1935 census was 962,000 and was estimated at 974,025 in 1936. The two outstanding events of the year 1937 were a revolution in the outlying districts in February, which was suppressed by aeroplanes, and the boundary dispute with Nicaragua (see NICARAGUA). Behind the revolution lay serious economic difficulties engendered by the abandonment of many banana plantations because of "Panama disease." President Carías maintained a very precarious control, with only the army receiving regular pay. Foreign trade in 1936 declined 10%, although a slight betterment was discernible in 1937. Imports in 1936 totalled



ONE STAGE in the highly specialized work of growing hops. A professional still-walker strings wires on sixteen-foot poles for vines in a Kent, England, hop garden

\$8,723,130; exports (chiefly bananas, with some gold) aggregated \$9,215,212. Most of the foreign trade is with the United States



Honduras has approximately 600 miles of railways and 250 of intercoastal highway. External communication is by steamer and an American Airways. The monetary unit is the lempira (value of U.S.).

The 1937 budget called for \$5,715,850, with slightly over 5% allotted to education. In 1936, there were 789 schools and 5,318 pupils.

**Hongkong**, consisting of several islands and part of the mainland at the mouth of the Canton river on the Chinese coast, is a British Crown colony ruled by a governor with executive and legislative councils; area, 32 sq.mi.; population (est. 1937) 1,010,000 (including 22,250 non-Chinese civilians). Capital, Victoria (pop. c. 400,000). Hongkong has a university; the total school attendance is about 75,000. Sir Geoffrey Stafford-Northcote succeeded Sir Andrew Caldecott as governor during 1937.

Although no hostilities occurred in the colony during 1937, extensive defence measures were undertaken as a result of the Sino-Japanese conflict; works were erected on the frontier to prevent the entrance of panic-stricken troops, and every citizen was required to purchase a gas-mask. In December assurances were given by Japan that her navy would respect the integrity of Hongkong and its territorial waters.

On Sept. 2 a severe typhoon struck Hongkong, accompanied by a tidal wave, by which much material damage was done and some hundreds of persons drowned.

Hongkong's trade is mostly with Great Britain, Eastern lands, and the United States. Its imports in 1936 were valued at £30 millions and its exports at £25 millions. Revenue and expenditure were £1,875,000 and £1,844,500 respectively.

**Hops.** The six principal hop-growing countries of Continental Europe, Germany, Czechoslovakia, Poland, France, Yugoslavia and Belgium, produced about 56,800,000lbs. of hops

in 1937, as estimated by the Central European Hop Association. This compares with a crop of 68,343,000lbs. in 1936. In England and Wales the 1937 crop was estimated at 26,000,000lbs. from 18,093ac., as against 28,224,000lbs. from 18,077ac. in 1936. In the Pacific Coast States of the United States production was estimated at 44,399,000lbs. in 1937, compared to 25,156,000 in 1936 and 47,746,000 in 1935, with a yield of 1,302lbs. per acre in 1937, as against 1,200 in 1936. Labour shortage and market conditions caused the 1937 crop to be left on the vines. Government control in many resulted in decreasing the 1937 acreage by 15%, but Government guarantee of a minimum price has resulted in a larger yield per acre. In

Czechoslovakia Government control has not succeeded in reducing the acreage but has managed to stabilize it since 1934, in conformity with a policy similar to that of Germany, which proposes production for domestic needs only until prices are better. Poland and Yugoslavia increased their acreages in 1937. (See also MARKETING BOARDS.) (S. O. R.)

**Hornaday, William Temple** (1854-1937), American zoologist who was first director of the New York Zoological park (1896-1926). An account of his championship of American wild life including his founding and presidency of the Permanent Wild Life Protection Fund may be found in the *Encyclopædia Britannica*, Vol. 11, p. 751. In 1931, he added to his works on animal life *Thirty Years' War for Wild Life*, an account of this fight. He died in Stamford, Conn., March 6, 1937.

## Horniman, Annie Elizabeth Fredericka

(1860-1937), British theatrical producer, was born in London Oct. 3, 1860. Her work at the Abbey Theatre in Dublin and the Gaiety Theatre of Manchester won international recognition. In 1933 she was made a Companion of Honour by King George V. She died in London, Aug. 6, 1937. See the *Encyclopædia Britannica*, vol. 11, p. 753 for further information.

**Horse Racing.** During the season of 1937 the racing of thoroughbred horses reached an expansion exceeding anything previously of record. The gross sum of \$14,363,562 was distributed to the winners of stakes and purses in North America. The largest sum previously recorded was \$13,935,610, in 1927. During 1936 it had been \$12,994,605; showing a gain of \$1,368,957. Considering that the year was one marked by a severe business recession, much political, social and labour unrest and other features usually inimical to the progress of turf affairs,



WUEL D. RIDDLE'S War Admiral  
Winning the sixty-third Kentucky Derby



this was, superficially at least, a remarkable result. The chief underlying cause may be that the race tracks have become great revenue producers through taxation. They now pour millions of dollars into the treasuries of many different states, which have created racing commissions to supervise their conduct; and, whereas legislation, generally speaking, tended to be repressive in the past, it is now stimulative, in some commonwealths meetings having actually been prolonged in order to meet the tax demands made upon them. These taxes are levied upon the gate and upon the betting receipts and assume also varied forms, making it imperative, in order to support them without a deficit, that the operation should be upon a large scale. These conditions have, for the most part, grown up in the past half-dozen years. No longer ago than 1933 the gross amount of money raced for was but \$8,516,325. Since that year there has been a tremendous growth not alone in the financial status of the sport but in the number of meetings, the number of horses appearing at them and the number of races run. There are now over 2,000 separate and distinct racing days annually, with over 15,000 races run and over 10,000 different horses participating in them.

In 1937 some eighteen different racing associations distributed over \$300,000 each in stakes and purses, of which six distributed over \$500,000 each; the leader being Santa Anita park, near Los Angeles, California, with \$754,760; it being significant of the conditions outlined above that this organization did not come into the field until the late winter of 1934.

The leading owner of 1937 was Charles S. Howard, of San Francisco, whose horses race in the name of his wife and were the winners of 58 races and \$212,859; with the Milky Way stable of Mrs. Ethel V. Mars, of Chicago, second with 46 races and \$209,925. The leading winning horse of the season was the four-year-old colt Seabiscuit, of the Howard stable, he taking 11 races and \$168,580. Third on the list was the Glen Riddle stable, of Samuel D. Riddle, of Glen Riddle, Pennsylvania, with 17 races and \$176,140. Mr. Riddle's three-year-old colt War Admiral was undefeated in eight races and the winner of \$166,500. The richest race of the year was the Santa Anita Handicap for all ages, run at that course on February 27, which netted the winner, Rosemont, a five-year-old horse owned by Mr. William du Pont, Jr., of the Foxcatcher Farms stables, Wilmington, Delaware, \$90,700.

The season upon the harness turf was likewise the most successful for a number of years past. Compared with the thoroughbred turf, it is very modest in the amount of money and the volume of racing, but in genuine sporting values it successfully challenges comparison. The great event of the year was the lowering of the world's record for trotters in single harness from 1:56 $\frac{3}{4}$  (standing since 1922) to 1:56 by the grey five-year-old gelding Greyhound, owned by E. J. Baker, of St. Charles, Ill., and driven by S. F. Palin. Second only in interest and importance was the lowering of the three-year-old record from 1:59 $\frac{1}{4}$  to 1:58 $\frac{1}{4}$  by the bay colt Dean Hanover, driven by the daughter of one of his owners, Miss Alma Sheppard, a little girl but eleven years of age. The most valuable trotting event of the season, the Hambletonian Stake, was won by the bay three-year-old filly Shirley Hanover, like Dean Hanover bred and owned by the Hanover Shoe Farms, of Hanover, Penna. She was driven by Henry Thomas. (J. L. HE.)

**Great Britain.**—The flat-racing season was remarkable chiefly for the failure as three-year-olds of the horses that had been considered the best two-year-olds twelve months previously. For example, the winner of the Derby, Midday Sun, was not even thought of in connection with the Epsom classic race until after he had won the Free Handicap Sweepstakes only six weeks earlier. Midday Sun belongs to Mrs. G. B. Miller, who thus became the first woman-owner to win the Derby, if the victory gained by Lady James Douglas with Gainsborough in a war-time substitute

Derby at Newmarket is excepted. Midday Sun also finished third in the Two Thousand Guineas and the St. Leger, and undoubtedly had the most consistent classic record of the three-year-old colts. The Two Thousand Guineas went to France through the success of Monsieur E. de St. Alary's Le Ksar, whose trainer, the late Frank Carter, thought so little of his charge's chance that he did not trouble to go to Newmarket to see the race. Chulmleigh, owned and bred by Lord Glanely, won the St. Leger at Doncaster in the style of a good staying colt, and is expected to have a successful season in 1938 before being retired to the stud. The two classic races for fillies were both won by Exhibitionist who, like Midday Sun, is by Solario. In fact, Gainsborough, the sire of Solario, was responsible for four classic winners, as Chulmleigh is by Singapore, another of Gainsborough's stock.

Solario easily headed the list of winning sires, 16 of his progeny having won 26 races to the value of nearly £53,000 between them. The Phalaris horse, Fairway, came second, Blandford, now dead, third and Singapore fourth. It is interesting, from a breeding point of view, to recall that Solario, Fairway, and Singapore all won the St. Leger of their year.

The Aga Khan headed both the winning owners' and winning breeders' lists, his own horses having won more than £30,000 and those bred by him just over £46,000. Other prominent winning owners were Sir Abe Bailey, Sir Victor Sassoon, whose first class successes were gained by Exhibitionist, and Mr. William Woodward, whose St. Leger winner of the previous year, Boswell, won the valuable Eclipse Stakes at Sandown park. Mr. Woodward, who is chairman of the New York Jockey Club, also came second to the Aga Khan in the list of winning breeders, Sir Victor Sassoon being a close third, and Lord Glanely fourth. Mr. Woodward's horses are trained at Newmarket by Captain Cecil Boyd Rochfort, who won more money in stakes than any other trainer for the first time in his career. His total of more than £61,200 beat the Manton trainer, J. Lawson, by over £9,000; Frank Butters, who trains for the Aga Khan, coming third with nearly £49,000.

Gordon Richards, as seems inevitable nowadays, was once again champion jockey, having ridden 214 winners. The north-county rider, W. Nevett, was second with 110 winning mounts, eight more than H. Wragg, who was third.

Most of the big handicaps had unexpected results, starting with Marmaduke Jinks, who gained a narrow victory in the Lincolnshire Handicap on the third day of the season, starting at odds 33 to 1. William of Valence, French-bred, as his name indicated, made a name for himself by winning the Rosebery Stakes at Kempton park, the Lingfield Park Spring Stakes, and the City and Suburban Handicap at Epsom in successive appearances on the racecourse; but he achieved nothing of note afterwards. The Cambridgeshire was run before the Cesarewitch at Newmarket last season for the first time in the history of these two important handicaps. The reason for the change was the contention that horses could not compete in both events so long as the longer was run before the shorter. Actually no horse took part in both races. Artist's Prince won the Cambridgeshire, and Punch beat the previous year's winner, Fet, in the Cesarewitch. (A. K. B.)

**Horses.** The number of horses throughout a large part of Europe and Australasia increased during 1937, but decreased in the U.S., Canada, England, Wales, France and Italy. The decline in the number of horses and colts on U.S. farms was from 11,445,000 valued at \$1,141,911,000 on Jan. 1, 1937, to 11,163,000, valued at \$1,013,960,000 on Jan. 1, 1938, the U.S. Department of Agriculture reports. As of the same dates mules and mule colts on U.S. farms declined in number from 4,571,000 valued at \$597,156,000, to 4,477,000, valued at \$593,898,000.



For the last 18 years the number of horses and mules on U.S. farms has declined at an average annual rate of about 2.2%. Currently there has been a steady increase in the number of tractors, trucks, automobiles, and motorized tillage and harvesting machinery on U.S. farms. Even during the worst depression years before 1933 the rate of increase in tractors advanced, although in a lesser degree than before 1929 or since 1933. It is estimated that there are now in excess of 1,200,000 tractors on some 6,000,000 U.S. farms. The number of colts increased during 1937 in the U.S., but the mortality among older animals was unusually high owing to the large number of aged horses on the farms. The average value per head was \$90.83 in 1937. In 1936 it was \$99.06 per head.

In Canada the horse and colt census on farms in 1937 was 882,990, which was 8,550 fewer animals than in 1936. In England and Wales the loss was 7,500 head, from 865,600 in 1936. Scotland remained practically stationary, 147,000 in 1936 and 146,800 in 1937, while Northern Ireland increased 100, to 90,900 head. In France there were 2,810,000 horses and colts in 1936 and 36,000 fewer in 1937; in Italy, 816,270 in 1936 and 19,580 less in 1937.

Poland registered the largest increase of horses and mules in 1937 by an increase of 59,000 head, to 3,883,000. Belgium had a larger relative increase, 31,698, which raised the 1937 total to 163,104, while in Germany the increase was 17,224, to 3,430,000 head. New Zealand gained 1,629 head, to 277,799; Yugoslavia, 5,254, to 1,216,085; Czechoslovakia, 8,832, to 703,835; the Netherlands, 4,846, to 299,989; Norway, 4,115, to 189,583; Hungary, 3,787, to 798,066; Latvia, 3,178, to 391,948; Lithuania, 8,820, to 549,700. (See also SHOWS: *Horses*.) (S. O. R.)

**Horseshoe Pitching** was officially recognized in the U.S. for the first time by the A.A.U. in 1937. The sport really made more headway in Chicago than anywhere else due to the pioneer work of Hodgson Jolly of the national committee and his associates, including George Chumard of Cincinnati.

In the first senior national A.A.U. horseshoe-pitching championships, held in Cincinnati, John Lindmeier, of the Center Club, of Chicago, won the amateur title and the John A. Gordon challenge trophy. Walter W. Lane was the runner-up; Arlo Harris, third; Charles Hill, fourth. The doubles title was captured by Walter W. Lane and Hubert Trinkle; the runner-up team comprised T. Henderson and Alan Boles. (J. B. P.)

**Horticulture.** An important event to flower growers in the United States has been the altered outlook concerning imports of bulbs. In future imports of narcissus bulbs in quantity will be possible, and this should strengthen the bulb-growing industry in the States. Of even greater importance is the withdrawal of the scheme which hitherto fixed a minimum price for the bulbs exported from Holland; this will have world-wide repercussions.

Despite industrial depression, the flower-growing industry in the United States is holding its own. The long-stemmed American rose still leads the world; Red Hoover and Murray (salmon rose) are new introductions of note. Pot plants continue to gain in importance; the spiraea, named varieties of *Saintpaulia*, *Kalanchoe bulbifera* var. *coccinea*, the White Easter Greeting dahlia (grown for the Easter market). For many years only the white freezia (*refracta alba*) was known as a florists' flower, but there are now available many improved varieties and many different colours. These include Elder's Giant White, Daffodil (yellow), Her Grace (blue), Maryon (lavender), and Robinetta (deep red).

In England the Coronation has had a noticeable influence on the

flower industry. There was a marked increase in the demand for cut flowers and flowering plants in pots; blue iris, white and blue hydrangeas, red rhododendrons, geraniums, and tulips in particular were produced in greater quantities than ever before, and all found a good market. In fact, 1937 has been throughout a good year for the flower grower.

**Bulb Flowers.**—Among cut flowers, bulb flowers from the open field and under glass are the most important in the English flower industry. Of daffodils, King Alfred remains the outstanding public favourite, while progress during the year has been noticed with the varieties Dawson City, Helios, Forerunner, Fortune, Mrs. Barclay, and Cheerfulness. Daffodils are now available by Christmas through the use in the forcing houses of "prepared" bulbs; i.e., those given treatment in cold storage before boxing. Many more tulips, however, are forced in England than any other bulb flower; of these William Copeland, Bartigon, and William Pitt are still the leading varieties, but Rose Copeland and Carrara (white) are making progress. English growers are now propagating hyacinth bulbs instead of buying small bulbs from Holland for growing on; these English hyacinths, in common with all British bulbs, have made notable progress, and there has been built up in England a live and progressive bulb industry.

**Anemones.**—A striking development has been the increase in anemone production in the west of England since the introduction of tariffs in 1931—this increase being from under 50 to over 400 acres. Improvement in the colour range has been secured by careful selection and by the introduction of named varieties of distinct colours, such as Hollandia (scarlet), the Bride (white), Lord Lieutenant (blue), Sylphide (magenta), the Admiral (double magenta), these magenta or wine-coloured varieties being recent introductions that have quickly become popular. Research work on anemones has shown the importance of deep cultivation of the soil which should have a definite pH value.

**Carnations.**—As a florists' flower the carnation ranks only after bulb flowers and chrysanthemums in importance in England. The original varieties were obtained from the United States, but of these only two, Lady Northcliffe and Pink Delight, are still grown. Of the newer varieties, such as Purity (white), Robert Allwood (scarlet), Pelargonium (fancy), and Tangerine have made progress, and exports of these and other promising varieties are being made to the United States. Expansion of the carnation industry continues.

**Orchids.**—The popularity of orchids has been maintained, and there has been a definite increase in the English production of cymbidiums and cattleyas which were formerly imported in quantity from Belgium. The cypripedium stocks, long grown in England, have been increased, and cut flowers in large numbers are marketed.

The flowers of the Dominions, which, incidentally, were a feature at the Chelsea Flower Show in 1937, include several which have won a permanent place in English horticulture. *Gerbera Jamesonii* and *Nerines* from South Africa are now important florists' flowers; *Gazania Ursinia* and *Venidium* are popular garden flowers.

**Gladioli** continue to make headway as florists' flowers, and much of this progress is due to the Canadian workers, who have developed especially the class of primulinus hybrids. *Palmer's Picardy* is now first favourite on the cut-flower market, where *Primulinus gladioli* are in great demand.

Miss I. Preston at Ottawa has introduced some valuable interspecific lily hybrids. Lilies are attracting more and more attention. Specialists are raising bulbs from seed in quantity, and supplies should soon be available to place lilies within the reach of all gardeners. (See also SHOWS: *Horticultural*.)

(H. V. T.)



**Hospitals.** Hospital fundamentals include plant and equipment, medical staff and auxiliary workers. Advances in hospital administration are achieved by improving these fundamental resources, by adjusting their relations, and by the adaptation of hospital program to community need. In a huge non-regimented country like the United States, a country whose people are energetic, ambitious, and not lacking in interest in the public welfare, no widespread public service is ever at a standstill; but radical changes are rarely accomplished in any single year.

Hospital building plans in 1937 show increasing attention to functional needs. The requirements of chronic patients other than mental and tuberculosis patients have been studied intensively and an attempted solution of the problem in large-scale planning has been made by the hospital department of New York city. Out-patient departments have been improved by more liberal space allowances, and by improvements in diagnostic and therapeutic equipment; the sub-division of large public wards into smaller fixed units or their optional sub-division by means of curtained cubicles has been noticeable. Air-conditioning of operating rooms, X-ray departments, and other special units has been extended. Air-conditioning apparatus for patients' single rooms has been extensively used and several attempts have been made at air-conditioning of entire hospitals. Oxygen therapy as a specialized application of air-conditioning, has been more widely used than before.

Many rural hospitals now possess adequate laboratory and therapeutic equipment, partly as the result of local enterprise, partly due to the assistance of private foundations; this improvement has been promoted by national medical organizations functioning as standardizing agencies.

The qualifications of clinical specialists serving in hospitals has been defined by competent professional groups whose standards have been more generally adopted as guides by the appointing authorities. Hospitals have sought to introduce into the educational content of the first interne year, and into the advanced training of residents who aspire to become specialists, elements of professional training prescribed by the American Medical Association and other interested bodies. Tentative agreements have been reached between representatives of hospital administration and spokesmen for the medical specialties on a suitable relationship between radiologists and anaesthetists on the one hand and hospitals on the other.

For many years the American Hospital Association has sought adequate means for the training of hospital executives. This year the Hospital Association signified its willingness to relinquish this task to the comparatively new American College of Hospital Administrators, which has published a report outlining a definite plan of action. An institute for hospital administrators, conducted in Chicago under university auspices, was well attended.

Surveys of local hospital needs have heretofore been made by important American communities, including Cleveland, St. Louis, Philadelphia and Memphis. In 1937, the Hospital Survey of New York completed for New York city and the neighbouring metropolitan territory a survey more ambitious in plan and scope than any heretofore attempted. Novel chapters in the report are those dealing with the essentials of good care of hospital patients, and a consideration of the number and character of professional and non-professional personnel and the conditions of employment. The principal recommendation of the New York survey report is a demand for the better control and co-ordination of institutions and agencies.

Under the leadership of paid organizers, the promotion of unions of hospital workers continues. A Union of Professional

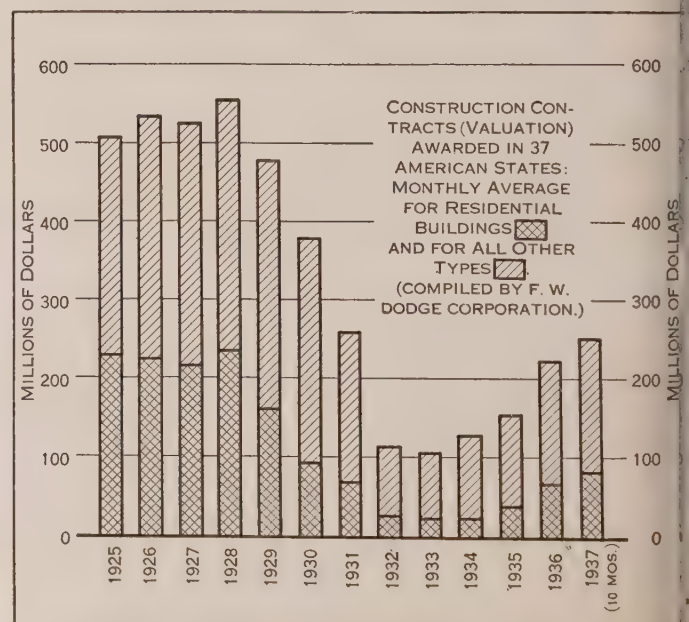
Workers is seeking to enlist physicians and nurses in a single organization with laboratory technicians and pharmacists. The union movement has been met by hospital administrators with sympathy for workers whose needs have not in the past received reasonable consideration, but union organizers have discovered that there exists a widespread conviction that the strike is not a weapon that can properly be used against hospitals. In New York city, a sit-down strike by hospital employees resulted in a Supreme Court decision which declared that "the State and subdivisions thereof may not have their appropriate functions interfered with by strikes and neither may charitable, educational or religious associations or corporations. Chaos would result and the public health and welfare would be materially affected."

(S. S. G.)

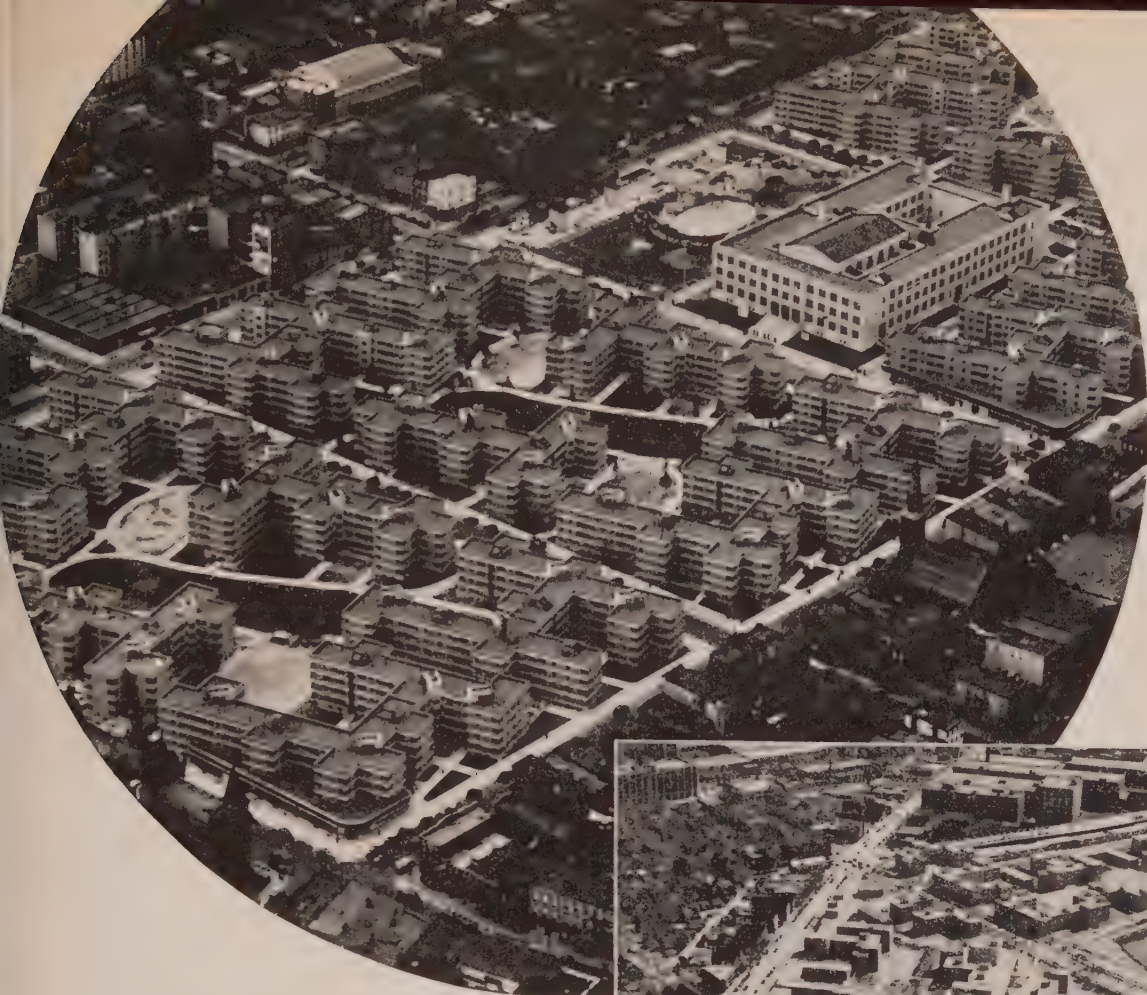
**Housing.** The year 1937 saw important developments in the public housing history of the United States. For residential construction by private enterprise, see BUILDING AND THE BUILDING INDUSTRY.

The urban demonstration program of the Public Works Housing Division neared completion. By December, construction was 88% complete. One project, Techwood, at Atlanta, Ga., had been finished and occupied in 1936. Twenty-five were occupied during 1937, containing altogether 9,948 dwelling units. The remaining 26 by the end of the year were selecting tenants or receiving applications. These 52 projects are located in 41 communities in 20 States, the District of Columbia, Puerto Rico and the Virgin Islands. They contain 21,770 small dwellings and flats. The locations are widely distributed among the North-eastern, South-eastern and Central States, but have not reached the West. More than half involve slum clearance with rehousing on the site. In some other cases the city has undertaken to demolish as many unfit housing units as were built. Nearly half of the projects are for Negro tenants, who suffer from bad housing more than any other group.

Like all other public construction under the Federal Emergency Administration of Public Works, these housing projects have enjoyed a 45% capital grant from the National treasury, neither more nor less than the countless school-houses, sewer systems and town halls built during the depression. The George-Healey Act of 1936 provided that, in the housing projects, the other 55% of cost should be repaid to the Government, principal and interest out of rents, and that no tenants should be accepted whos







WILLIAMSBURG IN BROOKLYN, New York, is the largest U.S. Government housing project, with 1,622 apartments

Right—JULIA C. LATHROP PROJECT, Chicago, designed to house 3,260 persons and cost \$5,900,000 →



Left—LOCKEFIELD GARDEN APARTMENTS, Indianapolis, Indiana

Lower left—OLD HARBOR VILLAGE, Boston, Massachusetts, a Federal project with 1,016 apartments costing \$6,636,000



Lower right—JANE ADDAMS PROJECT in Chicago, one of the fifty-one Federal housing groups in thirty-six cities







MODERNISTIC APARTMENT HOUSES in Tel Aviv, the all-Jewish industrial city founded in Palestine in 1909, which in 1937 had a population of 150,000

family income was more than five times the rent. Standards of lay-out, construction and equipment are high. They have been criticized as too high. It is to be hoped that economies may be achieved through further experience and decentralization without sacrificing standards.

Basic rents (comparable to those charged by private enterprise) are generally in the neighbourhood of \$5.00 per room per month. Confusion has been caused by the additional \$1.00 to \$2.00 for service charges not usually included in rent—electricity for light and refrigeration, gas for cooking—or only included in higher priced apartments as steam heat and hot water supply. The lowest average rent is \$2.24 per room in Caguas, P.R., with no utility included except water. The highest is in New York at Harlem river houses, \$7.12 per room per month including heat in winter and hot water at all times, or \$8.52 including also light, refrigeration and cooking fuel.

The two New York city projects have been leased to the New York city housing authority for management. Leases have been signed with the Chicago housing authority for the projects in that city, and a number of others are being negotiated. Pending lease or sale to local housing authorities, management is controlled from Washington.

Rural housing built by the Resettlement Administration and its predecessors involves too many non-housing considerations for discussion here. Its three garden suburbs created near Washington, Cincinnati and Milwaukee are important as object lessons in enlightened community planning for healthful and pleasant living. Constructed with relief labour, their cost proves only that relief labour is expensive. Greenbelt, the Washington suburb, received its first tenants in September.

The United States Housing Act of 1937, setting up a permanent United States housing authority in the Department of the Interior, sponsored by Senator Robert F. Wagner and Representative Henry R. Steagall, was passed just before Congress adjourned in late August. Nathan Straus of New York, appointed Administrator by President Roosevelt, took office November 1. At the same time, the records, personnel and projects of the housing division were transferred to the new authority.

The act embodies the first national public housing policy and program for the United States. It provides complete decentralization to local housing authorities of responsibility for initiation, construction, ownership and management of housing projects. The United States housing authority will set standards, but is essentially a fiscal agency. It will make loans up to 90% of necessary capital, the remainder being contributed by State or local authority. Loans are to be repaid within an amortization period not

exceeding 60 years with an interest rate not more than 4%. Bond issues to provide money for loans cannot exceed \$500,000,000 in the next three years.

Aided projects must either include slum clearance directly or provide for equivalent demolition of unfit dwelling units, except in cases of proved shortage. To assure rents sufficiently low either a flat capital grant or an annual grant may be made, but not both. In either case, State or local housing authorities must provide 20%.

Congress, desirous of forcing economy, placed a maximum of \$1,000 per room on construction cost in towns under 500,000 population, and \$1,250 in larger cities. The 5 to 1 ratio of family income to rent is continued, except that families with three or more minor dependent children are allowed a 6 to 1 ratio.

States and cities since 1933 have been preparing for decentralization by State legislation declaring the clearance of slums an erection of low-rent housing for families of low income to be for public purposes. During that period sixty-one State and local housing authorities have been appointed. Ten States enacted such legislation during 1937. Eleven others amended earlier laws to bring them in line with the requirements of the national act. Nine States had earlier laws which they have not amended. Therefore, the prompt "earmarking" of loans aggregating \$136,250,000 by Mr. Straus to 32 cities in 16 States is of a provisional character, subject to their being able to make good at their end and in some cases subject to additional State legislation.

**BIBLIOGRAPHY.**—*Slums and Housing*, James Ford and others, 2 vol. Harvard University Press, 1936; *Housing Officials Yearbook*, National Association of Housing Officials, Coleman Woodbury, Editor; *Federal Emergency Administration of Public Works*, Housing Division, Bulletin No. 2—*Urban Housing*, the Story of the PWA Housing Division, 1936. (E. E. Wo.)

**Europe.**—The year 1937 is perhaps most notable in the housing world for the fact that experts of all European nations and of the United States made the first collective serious investigation into a problem which had become peculiarly menacing everywhere—the question of horizontal or vertical building. Even in England where the continuous tradition of the single-family house with garden had been, it seemed, firmly entrenched, it was reluctantly accepted as a regrettable necessity that tower development should be allowed, and the London County Council, the biggest English local authority responsible for housing, reversed its policy so that while in 1929 only 5.6% of the houses erected were flats in 1937 4,866 out of a total of 7,504 were flats or apartment houses. These apartment dwellings, too, were erected mainly on sites which had to be cleared of old buildings. This departure from the English tradition was regarded with horror by many



England itself, and by Mr. Steen Eiler Rasmussen, the Danish architect, who wrote a notable book *London, the Unique City*, to show how anti-social such development is. European and American interest was, therefore, focussed on the discussions at the Housing and Town Planning Congress, one of a series organized as part of the *Quinzaine Internationale d'Urbanisme*, held in Paris in July. It was the object of the reports and the discussion to collate the views of many different countries on the initial cost, the management and upkeep costs, and the advantages or disadvantages of different types of housing, each applied to 5,000 persons on 50 hectares (123.5ac.) in single family dwellings of one or two floors, multi-family dwellings not exceeding four floors, or in tower buildings. Reports were received from Australia, Belgium, Denmark, England, France, Germany, Holland, Italy, Palestine, Poland, South Africa, and the United States. M. Jean Royer of France acted as general reporter, and the trend of the discussion revealed that prevalent opinion was strongly in favour of horizontal development and the single family house, and that only in exceptional cases should tower buildings be constructed.

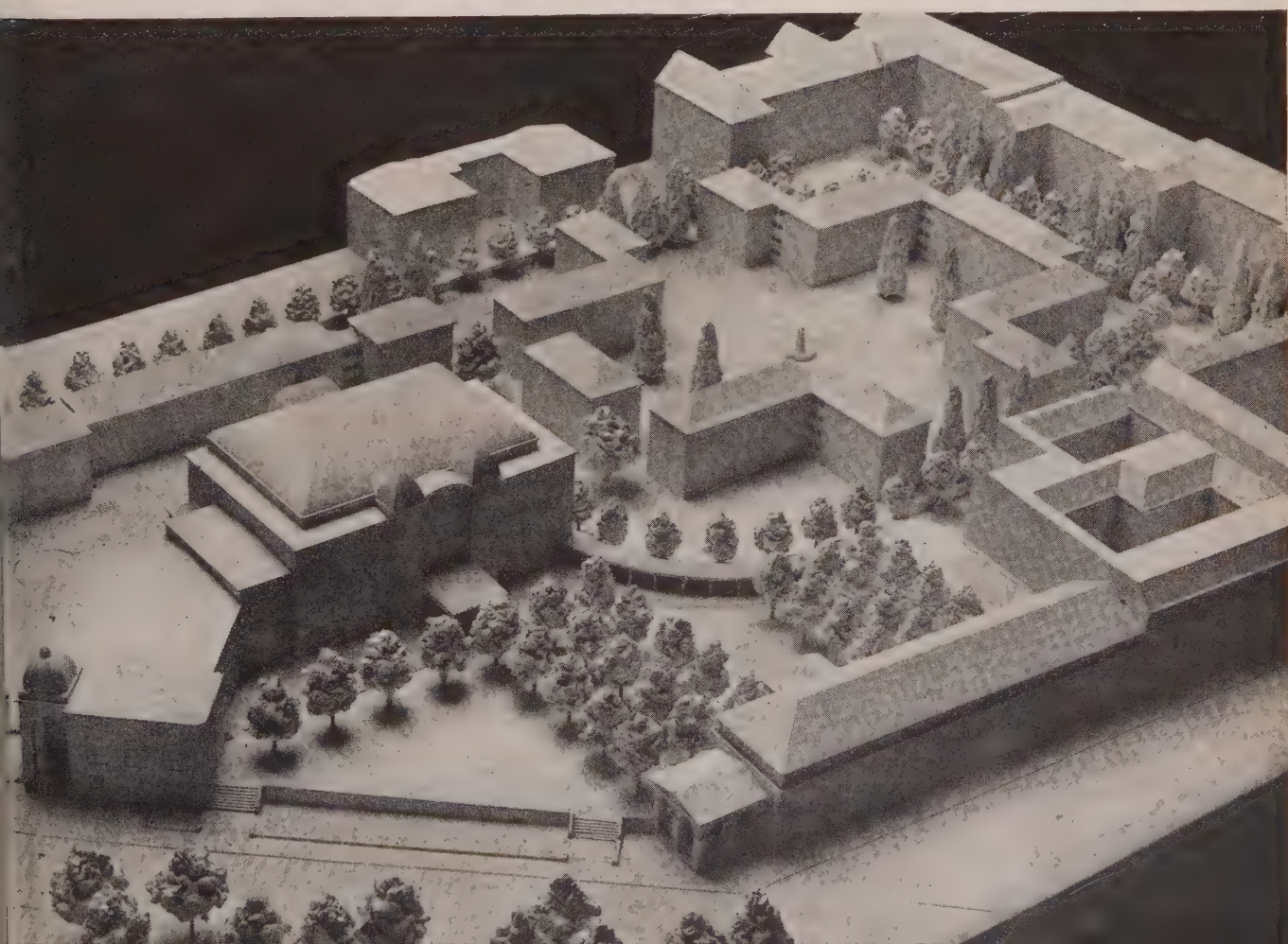
This viewpoint was generally welcomed by that large section of housing opinion which regards the flat or dwelling as a lowering of housing standards. Growing discontent in all countries was apparent with regard to ribbon building of houses along main arterial roads, sporadic development, and scattered development, objection being taken not merely on the ground that such development was a menace to natural beauty, but that it was expensive and unlikely to provide the occupants of the houses with an adequate social life. For that reason experiments in planned group development have been watched with great interest. The

REPLICA OF 300 FLATS and gardens, especially designed to provide homes for Nazi patriots, in Berlin's new "Dr. Josef Goebbels Settlement"

experiment of the United States Resettlement Administration in creating three Greenbelt towns—described as communities built on raw land, in which every acre is put to its best use, and in which the traditional dividing lines between town and country are broken down . . . each of them surrounded by a broad girdle of park and farmland—is being watched throughout the world, and particularly in Europe, with special interest. A modification of the English Garden city idea, the Greenbelt town falls short of Howard's ideal only in the scanty provision of zones for industry. A similar departure from suburban peripheral development, now extensively practised but unanimously condemned, is the satellite township of Kincorth, near Aberdeen, Scotland, a competition for the design of which created widespread interest. A rising feeling not only for rehousing but for housing of good quality was symptomatically expressed in this connection, in a strong demand that the houses and public buildings in this new community should be built of local stone, *i.e.* Aberdeen granite.

At the same time, there is apparent everywhere a tendency to accept new styles and new materials. In Scandinavia, of course, the building of timber dwellings and pre-fabricated dwellings by the tenants themselves at a cost of £240-£250 goes on apace but makes slow but, nevertheless, significant progress in Great Britain. Similarly, modern architectural styles in domestic building begin to make their appearance in England, styles which found immediate acceptance in Germany and Czechoslovakia after the war. The 4-inch reinforced concrete house made its first appearance in Britain in 1933; in 1937 concrete was established as a convenient and distinguished medium, avoiding fussiness and securing economy of plan and function. Nevertheless, brick continues to be the most general medium, and in it, too, noteworthy houses have been erected.

Two other events in Great Britain are worthy of mention as





pointing to a growing care for good building. One was the announcement in April 1937 of a scheme by the National Trust, departing in many ways from the successful *La Demeure Historique* system in France, whereby old historic houses may be preserved at the expense of the trust, the owner being allowed to maintain in residence and being exempt from all income tax and death duties. The other was the formation of the National House Builders Registration Council, which, having adopted standard specifications, issues a certificate to house purchasers guaranteeing that the construction is as set out. This move to prevent jerry-building won the approval of the Ministry of Health, but is not yet as widely known to the general public as is desirable.

Central heating schemes, applicable to detached and semi-detached houses, were started by the city architect of Dundee, Scotland, and designed by Donald V. H. Smith, some 15 years ago. The total cost of the plant was £59,000 but against this nearly £40,000 was saved by the omission of flues, fire-places, etc., leaving the net cost at £19,000. A report issued in 1937 shows that in 12 years the profit from the undertaking has cancelled more than half the net capital cost. The estates involved were especially scattered, while the charge to householders, namely, 2s. 8d. represents a substantial economy in heating costs, while supplying constant hot water. The importance of this scheme as a balancing factor in estimating the desirability of cottages as against flat development or apartment development will be increasingly recognized.

In Russia, and particularly in Moscow, efforts are being made to raise the standard of living accommodation to a level similar to that obtaining in English municipal cottages: the Mossoviet is aiming at a standard of 12 sq. metres per person, i.e., 48 sq. metres (480 sq. ft.) for a family of four. Flats are definitely preferred in Moscow because, say the inhabitants, "we have always lived in flats and see no reason to change." Overcrowding is appalling, and in order to reach the standard laid down, a ten-year program is envisaged totalling 15,000,000 sq. metres of accommodation; the 1937 share of this task was 1,000,000 sq. metres, an increase of 200,000 sq. metres over that provided in 1936. The necessary output will have to be increased to 2,000,000 sq. metres per year if the program is to be completed, but in the meantime building is restricted because of war or defence preparations.

This is true of practically every European country where house building has been seriously affected by the competition in armaments, by the growing scarcity of building materials, and even, despite widespread general unemployment, of building labour. This problem will, perhaps, engage the attention of the new International Federation for Housing and Town Planning, formed in 1937 by the linking of the organization of that name with the International Housing Association of Frankfurt. Mr. G. L. Pepler was appointed first president of the new organization, which holds its first congress in Mexico City in Aug. 1938, and which has set up administrative offices in Brussels. (See also ARCHITECTURE; BUILDING AND BUILDING INDUSTRY; STATE LEGISLATION: *Housing*; TOWN AND CITY PLANNING; UNITED STATES: *Congress*; WASHINGTON.) (F. R. Y.)

**Howe, Edgar Watson** (1853-1937), Kansas editor and philosopher, was known as "the Sage of Potato Hill." Born at Treaty, Ind., May 3, 1853, he entered the newspaper field by publishing *The Golden (Col.) Globe* at the age of 19. Four years later, he founded *The Atchison (Kan.) Daily Globe* of which he was the editor and publisher until 1911. From that date until 1933, he edited *E. W. Howe's Monthly*, which with his twenty-eight books established his reputation for composing pithy paragraphs. His first book, *Story of a Country Town*, was an immediate success which reached fifty editions during his life-

time despite the fact that publishers' rejections forced him to print it on his own presses. Thereafter one book followed another in rapid succession until his death at Atchison, Oct. 3, 1937.

**Howland Island**, an island in the Pacific ocean, latitude 0° 49' north, longitude 176° 42' west, approximately 1,620 mi. south-west of Honolulu, Territory of Hawaii. It was discovered by Captain George E. Netcher of New Bedford, Mass., in 1842, and taken possession of by the United States in Feb. 1857 by A. C. Benson of the American Guano Company. In 1872 the "U.S.S. Narragansett" surveyed Howland island and found it to be about two miles long, north and south, one-half mile wide, 18 or 20 ft. high, of coral formation, and with a fringing reef. A clump or two of brushwood near the centre of the island and a little grass on the ridge is all the vegetation it affords. Slightly brackish water can be found by digging a few feet. Executive Order No. 7368 issued by the President of the United States on May 13, 1936, placed the island under the supervision of the Division of Territories and Island Possessions, Department of the Interior. Four Hawaiians have been placed on the island for the purpose of obtaining certain meteorological data which is desired in connection with the possible development of air routes to the Southern Hemisphere. (E. GRU.)

**Hubay, Jenő de** (1858-1937), Hungarian violinist and composer, sometimes known as Eugen Huber, who during the latter part of the 19th century was recognized as one of the greatest virtuosi and whose methods of violin teaching made him famous. He died in Vienna, March 12, 1937. For an account of his musical career and compositions, see the *Encyclopædia Britannica*, vol. 11, p. 855.

**Hughes-Stanton, Sir Herbert** (EDWIN PELMAN) (1870-1937), R.A., British artist; born in London. His father was William Hughes, a well-known flower painter, but Sir Herbert took the additional name of Stanton. His art was self-taught, and he was, from an early age, an exhibitor at the Paris Salon, the Royal Academy, and several other exhibitions. He was elected A.R.A., 1913, and R.A., 1919; and was in 1915 elected a member of The Royal Society of Painters in Water-colours, becoming its president in 1920. In 1923 he was knighted. Sir Herbert's best work was done as a landscape painter in water-colours. His "A Pasturage among the Dunes," was bought for the Chantry Bequest in 1908, and specimens of his work are to be seen in the Tate Gallery, and in galleries in most of the larger English cities, as well as in the Luxembourg, Rome, Florence, and other European galleries. He died Aug. 2, 1937.

**Hull, Cordell** (1871- ), American statesman, was born Oct. 2, 1871, at New Pickett, Overton county, Tenn. He studied at the National Normal university, Lebanon, Ohio, 1889-90, and in 1891 graduated B.L. at the Cumberland University Law school. He served in the Spanish-American War as a captain of Tennessee infantry and began legal practice at the Tennessee bar. He sat in the State House of Representatives, 1893-97, and was a State judge, 1903-07. In 1907, he began a long and distinguished service in Congress. With one brief interval—1921-23—Mr. Hull was member of the House. From 1921-24, he was chairman of the Democratic National Committee. In 1931 Tennessee elected him a Senator, a position that he resigned in 1933 in order to become President Roosevelt's secretary of State. In the domestic field of constructive statesmanship, Mr. Hull is remembered as the author of the Federal Income Tax law of 1913 and of its revision in 1916. Internationally his name is as-



associated with the "good neighbour policy." In 1933, he enunciated his policy before the Pan-American Congress at Montevideo and the practical application of this policy has been the negotiation of trade agreements with foreign countries in the Americas and elsewhere. Secretary Hull represented the United States at the London Economic Conference, 1933. In Dec. 1936, he attended the Pan-American Peace Conference in Buenos Aires. On his return he held conferences with Lord Runciman, president of the British Board of Trade and in February secured from Congress an extension of his power to conclude reciprocal trade agreements. March developments were featured by a long correspondence with Germany over a derogatory speech by Mayor LaGuardia of New York and the resulting criticisms of the United States in the German press. In April the secretary received the Woodrow Wilson Foundation Medal and urged abandonment of competition in armaments as a step toward insuring peace. With the outbreak of hostilities between Japan and China in early July, however, the international situation grew worse instead of better. Secretary Hull urged withdrawal of U.S. citizens from the war areas, but insisted upon protecting those remaining. The bombing of the "President Hoover" in August and the sinking of the "Panay" in December forced energetic protests from the secretary and made it clear that 1938 would be a year of even greater responsibility for the man who at home and abroad had won confidence as a liberal-minded, well-informed and efficient executive of broad views, expressed with courtesy and discretion.

**Hungary**, a kingdom of central Europe and member of the League of Nations. Bounded W. by Austria, N. by Czechoslovakia, E. by Rumania, S. by Yugoslavia. Regent, Admiral N. Horthy. Flag, red, white, and green in horizontal stripes, with crown and arms in centre.

**Area and Population.**—The area is 35,911 sq.mi.; population (Dec. 1936) 8,989,000. According to the 1930 census, the habitual language of 89.3% of the population was Magyar; of 6.8%, German; of 1.7%, Slovak; 64.9% of the population are Roman Catholics, 2.3% Uniates, 27.1% Protestants of various denominations, 5.1% Jews.

Education is compulsory and universal. It is in the hands,

partly of the State, partly of the Churches, which enjoy wide autonomy in this and other respects. The largest cities, with populations as on Dec. 31, 1936, are: Budapest, 1,051,804 (including Greater Budapest, 1,421,397); Szeged, 139,546; Debrecen, 125,337; Kecskemét, 82,329; Pécs, 70,399; Miskolc, 60,145.

**History.**—In the absence of a king, Hungary is governed by a Regent and a Parliament consisting of an Upper and a Lower House. On July 1, 1937, a bill was enacted increasing the powers of the Regent and making provision for the appointment of his successor. A strengthening of the powers of the Upper House is also planned, but a promise has been given that this shall come into force only simultaneously with the bill reforming the suffrage, which is still open outside the large towns. The last-named measure, repeatedly promised by M. Darányi, the present premier, as by his predecessor, was introduced on Dec. 30. The bill provided for secret and direct suffrage for males of 26 and females of 30, subject to qualifications of education and residence.

The real interest in Hungarian politics centred upon the alleged increase of German and Nazi influence, which was favoured by those who appreciated authoritarian methods, or hoped for German help to recover Hungary's lost territory, but watched with great anxiety by other sections of the population. Several attempted coups, more or less farcical, were crushed during the year. There were warm affirmations of friendship with Austria and Italy, whose king visited Budapest on May 11. In the autumn, negotiations for a *modus vivendi* were attempted with the Little Entente.

Hungary was willing, not to renounce her revision aims, but to put them temporarily into cold storage. She demanded in return recognition of her equality of rights in armaments and a guarantee for the Magyar minorities beyond her frontiers. After dragging on in Sinaia and Geneva, the negotiations had to be postponed until after the elections in Rumania, the country which had found most difficult in giving the latter assurance.

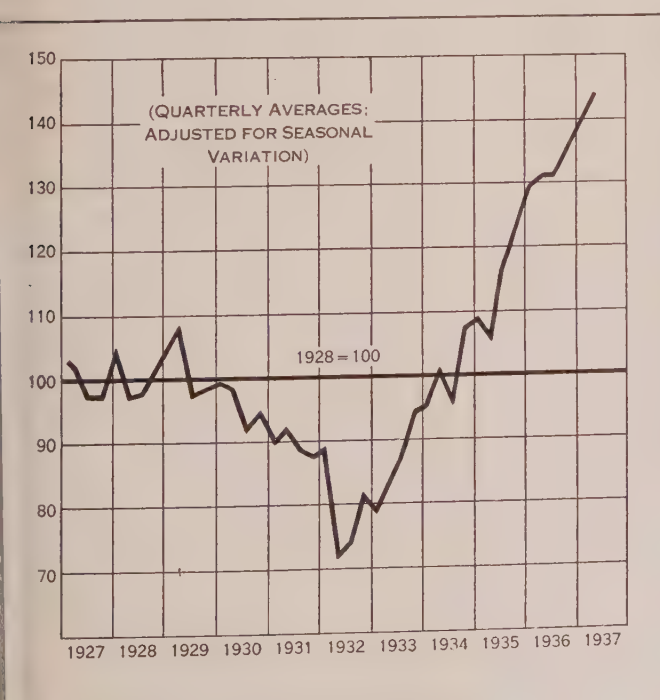
**Trade and Communications.**—The basis of Hungary's economic life is still agriculture, in which 51.8% of the population is engaged. The principal crops cultivated are maize, wheat, potatoes, and sugar-beet. With the rise of world prices Hungary's economic position has improved considerably.

Industry has made a considerable recovery. The index of effective employment surpassed the 1929 figure throughout 1936 and was very little below it in the spring of 1937. The average of industrial activity for 1936 was 133 (average 1925-29, 100). Industrial unemployment has usually varied between 50-55,000.

Hungary's foreign trade has been much hampered by exchange restrictions, and by the absence of an extensive trade agreement with Czechoslovakia, formerly one of her chief markets and sources of supply. A new agreement concluded in 1937 improved the situation only slightly. The Rome Protocol, concluded in 1934 with Italy and Austria, assured a market for an important part of the Hungarian cereals crop. These had to be modified slightly in 1937, with the result of leaving Germany more conspicuously than ever as Hungary's chief market and source of supplies. In general, however, both imports and exports have shown a tendency to rise. Imports for 1936 were valued at 432,992,000 pengös, and exports at 506,649,000. Hungary was able in 1937 to resume a fuller service on her public debt, in part suspended.

The monetary unit is the pengö, nominally equal to 17.49 gold cents. There are considerable bonuses on the sale of foreign exchange. The budget for 1936-37 showed receipts estimated at 1,136.1 million pengös, and expenditure 1,211.8; the figures for 1937-38 were 1,192.1 and 1,267.8 million pengös respectively.

**Defence.**—Hungary's defence forces are still limited by the Treaty of Trianon to an army of 35,000, all ranks. In 1936 the budgetary effectives numbered 1,817 officers and 33,209 other



HUNGARY: Industrial production index (*The Annalist*)





CHAMPION SKATERS dancing on blue ice in Madison Square Garden, New York, in type of spectacular skating exhibitions that have won popular approval

ranks. There are also 19,000 gendarmerie, 14,000 police, 4,000 customs guards, and 1,600 river guards. Negotiations begun during 1937 for formal recognition of Hungary's right to equality in armaments have not yet been concluded. (See also LITTLE EN-  
TENTE.)

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**Hurdling:** see TRACK AND FIELD SPORTS.

**Ice Hockey.** The National Hockey League of powerful American and Canadian professional teams enjoyed a banner season during 1936-37. At the close of the regular season the standing of teams was as follows:

International Group					American Group				
	Won	Lost	Tied	Pts.		Won	Lost	Tied	Pts.
Canadiens (Montreal)	24	18	6	54	Detroit (Red Wings)	25	14	9	59
Maroons (Montreal)	22	17	9	53	Boston (Bruins)	23	18	7	53
Toronto (Maple Leafs)	22	21	5	49	Rangers (New York)	19	20	9	47
Americans (New York)	15	29	4	34	Chicago (Black Hawks)	14	27	7	35

In post-season play-offs the Detroit Red Wings won three of five games to clinch the league title and enter the Stanley Cup final. Montreal Maroons defeated Boston Bruins two out of three for second place, and New York Rangers finished third with two straight victories over Toronto Maple Leafs. In the semi-finals the Rangers beat the Maroons two straight. The final

series for the Stanley Cup, historic emblem of world professional championship, went the full five games, Detroit's Red Wings, holders of the trophy, winning. The 1937 national amateur championship was held at Boston, Mass., March 27 and 28. Four teams competed and the Boston Olympics won the title. Amateur ice hockey received a temporary setback when the teams making up the strong Eastern Amateur Hockey League were disqualified by the A.A.U. executive committee. Outdoors the sport was greatly curtailed owing to the mild winter. (J. B. P.)

**Iceland,** island kingdom of North-west Europe, hereditarily united with Denmark, in the North Atlantic ocean, touching the Arctic Circle. Capital, Reykjavik (seaport; 34,231 in 1935). Ruler, King Christian X (see DENMARK). National flag: red St. George's cross, white-bordered, on blue.

**Area and Population.**—Area: 39,709 sq.mi., divided into 16 provinces; population (1930): 108,861 (density, 2.7 per sq.mi.), predominantly Icelandic and Evangelical Lutheran (State-endowed church; conscience is free). Towns (1935): Akureyri, 4,503; Hafnerfjördur, 3,735; Vestmannaeyjar, 3,510. Education figures (1928-29): 238 (compulsory) elementary schools, 8,709 pupils. Reykjavik has a university.

**History, Trade, and Finance.**—By Charter (1920; amended, 1934) the king's power is exercised by an executive Council (president, Hermann Jónasson, and two others, 1934), being shared, in legislation, with the Althing (not exceeding 49; one-third in Upper, two-thirds in Lower, House), elected by universal adult suffrage and modified proportional representation.

Only one-seventh of the land is productive (0.25 per cent under cultivation). Fishing is important. Leading exports: animals and animal products, fish (cod) and fish oil. Imports (food, fuel, etc.; 1935): 45,469,561 krónur (£2,053,000); exports: 47,771,887 krónur (£2,157,000); Great Britain takes 13%.

Currency unit: króna (exchange: 22.15 krónur=£1). Budget (1937 estimate): 14,858,000 krónur.

There is neither army nor navy, but two fisheries patrol vessels are maintained (and one by Denmark). See also WATER POWER.

BIBLIOGRAPHY.—T. Thorsteinsson, *Iceland, 1936* (Reykjavik). (H. Fw.)

**Ice Skating** offered only limited outdoor recreation in the United States during the winter of 1936-37 because of the scarcity of sustained freezing temperatures. As an indoor spectacle the sport continued to attract huge crowds in metropolitan areas, a four-day charity figure-skating carnival at Madison Square Garden, New York, drawing capacity crowds of 16,000 to each performance. The national amateur speed skating championships were held at Petoskey, Mich., Feb. 6 and 7. Marvin Swanson of Minneapolis won the men's title for the third consecutive year. Miss Madeline Horn of Beaver Dam, Wis., beat the defending champion, Miss Dorothy Franey of St. Paul, to gain the women's title. The indoor championships were held in the Chicago Arena, March 27 and 28. Leo Freisinger won the men's championship by a comfortable margin. Miss Madeline Horn and Mrs. Dorothy Franey Drolson tied for the women's title at 80 points. For the first time in American figure skating the national championships were moved from the Atlantic seaboard. They were held in the Chicago Arena, Feb. 12 and 13. Seventeen-year-old Robin Lee of Minneapolis won the men's championship for the third successive year and Miss Maribel Y. Vinson of Boston won her ninth title in the women's competition. (J. B. P.)

**Idaho,** one of the States of the North-western United States, popularly known as the "Gem State," area, 83,880 sq.mi.; population according to the U.S. census of 1930, 445,032.



estimated July 1, 1937, 1,93,000; capital Boise, 1,544, the largest city of the State. Cities with more than 5,000 are Pocatello, Idaho Falls, Lewiston, Twin Falls, Coeur d'Alene, and Nampa. Of the State's population but 129,507 or 69.1% are urban according to the 1930 census; there are 437,562 whites; 16,638 Indians; 407,108 native whites; and 30,154 foreign-born whites.



BARZILLA WORTH CLARK, governor of Idaho

**History.**—New Democratic officials assumed office in 1937 as result of the 1936 Idaho elections, but Senator Borah was returned to Washington for the sixth time by a substantial majority over Governor Ross, Democrat. President Roosevelt visited the State during September. Leading State officials during 1937 were: Governor, Barzilla W. Clark; Lieutenant Governor, Charles C. Gossett; Secretary of State, Ira H. Masters; Attorney General, J. W. Taylor; Chief Justice, Raymond L. Givens; State Treasurer, Myrtle Enking; State Auditor, H. A. Parsons; State Mining Inspector, Arthur Campbell.

**Education.**—The school population of Idaho was 141,788 during 1936. Of these, 119,270 attended public schools, there being 6,372 pupils and 3,161 teachers in 1,413 elementary schools and 2,898 pupils and 1,334 teachers in 193 high schools. A sum of \$10,043,694 was expended during 1936. Repeal of the State sales tax by referendum in November of that year complicated the problem of financing the schools during 1937. Governor Clark, however, vetoed a plan which would have transferred \$1,500,000 of the general fund to educational purposes.

**Banking and Finance.**—On June 30, 1936, there were 33 national and 22 State banks with a capital of \$5,050,000, deposits of \$82,481,000, and total resources of \$92,742,000. Receipts for the two-year period, 1935 and 1936, were \$48,704,903 and the expenditures \$47,040,178, which with previous balances left \$4,342,728 in the Treasury. The assessed valuation on Aug. 10, 1937 was real and personal property \$270,478,621, public utilities \$105,333,187, total with miscellaneous items \$381,043,757. This marked an increase of \$6,640,323, most of which was due to a rapid increase in mine profits. The tax return for 1937 was estimated at approximately \$1,905,000 of which \$375,000 was to be spent for relief. The 1937 levy was raised from 32¢ to 50¢ due to the abolition of the sales tax which was applied to relief purposes until defeated in the 1936 election by a vote of 75,468 to 68,728. On April 1, 1937, the State's bonded debt was \$1,920,000 as compared with \$2,403,500 a year previously. An issue of bonds valued at \$502,000 in September, however, restored the debt to its former level. The fiscal position will be measurably improved if the State continues to be successful in defending a 1% tax on mine earnings which has been ineffective because of law suits. A Supreme Court and a district decision upheld the tax during 1937.

**Agriculture, Manufactures, Mineral Production.**—Statistics for 1935 reveal that Idaho possessed 45,113 farms valued at \$7,395,329 with an output amounting to \$39,204,000. Because of increased crop values in 1936 rather than because of increased production, the total value of the two leading crops alone almost equalled the 1935 figure, 22,260,000bu. of potatoes bringing \$10,034,000 and 21,096,000bu. of wheat, \$18,142,560. The State also produced 2,448,000 tons of tame hay valued at \$17,381,000.

Recent statistics show that 459 Idaho establishments hired 10,537 wage earners and manufactured products valued at \$67,549,963 during 1935. The leading industries were lumber and lumber products (\$12,118,532), printing and publishing (\$1,924,999), butter (\$1,421,071), and flour (\$831,809).

Idaho's output of gold, silver, copper, lead and zinc was valued at \$27,654,472 in 1936 as compared to \$19,522,704 for 1935. Silver led with 14,537,530oz. worth \$11,259,317. The output and value of the others were: 182,678,000lbs. of lead, \$8,403,188; 98,200,000lbs. of zinc, \$4,910,000; 80,291oz. of gold, \$2,810,199; and 2,954,000lbs. of copper, \$271,768. Idaho led the United States in silver production and ranked second in the output of lead.

(W. E. B.)

**Illinois**, a north central State of the United States, admitted to the Union in 1818, has a population of 7,630,654 (1930 census) of which 1,242,447 are foreign born, 328,972 negro. Estimated population, July 1, 1937, 7,878,000. Area, 56,043 square miles. Capital, Springfield, population 71,864. Four cities in the State are larger: Chicago (3,376,438); Peoria (104,969); Rockford (85,864); E. St. Louis (74,347).

The State officers elected in the general election of Nov. 3, 1936, took office Jan. 11, 1937. Henry Horner, governor; Edward J. Hughes, secretary of State; Edward J. Barrett, auditor of public accounts; and Otto Kerner, attorney-general, were re-elected for a term of four years. John Stelle was elected lieutenant-governor for a four-year term and John C. Martin, treasurer, for a two-year term. All these officers are Democrats. The 60th General Assembly chosen in the same election had a Democratic majority in both House and Senate.

**History.**—Important acts passed by the 60th General Assembly, which sat January to June, 1937, were as follows: An eight-hour law for women workers; a new insurance code; marriage laws requiring a medical examination for both parties applying for a marriage licence, and prescribing a three-day period between the application for and the issuance of the licence. Permanent registration of voters, made applicable in 1935 to ten Illinois cities, was extended throughout Cook County (Chicago). A three per cent tax on public utility sales was passed to replace one that had been declared unconstitutional, and the three per cent Retailers' Occupation Tax (sales tax) was extended to Feb. 15, 1939, after which it reverts to two per cent. The life of the Illinois Emergency Relief Commission was extended to July 1, 1939. Other legislation set up State machinery for the administration of Unemployment Insurance and Old Age Assistance. Total appropriations for the biennium amounted to \$457,997,648.62.

**Education.**—Public instruction in Illinois is supervised by the State Superintendent of Education, elected every four years. John A. Wieland, Democrat, the present official, was elected in 1936. For the fiscal year ending June 30, 1936, the enrolment (elementary and secondary schools) was 1,327,269, with a teaching staff of 47,677. School buildings numbered 13,966. Schools are supported by local taxation and a State distributive fund, and are administered by some 12,000 school boards. At present an effort is under way to promote an equalization of opportunity for school children by enlarging the school unit, increasing State aid and centralizing the whole State system under a State board of education; but laws proposed to this end in the 60th General Assembly failed to pass. The five State normal schools for the training of teachers received a State appropriation of \$5,854,136 for the biennium of 1937-39. The University of Illinois located at Urbana has a 1937-38 enrolment of 13,647 students, including the Colleges of Medicine and Dentistry and the School of Pharmacy in Chicago. Its appropriations for 1937-39 amount to \$14,149,632.

**Charities and Correction.**—Twenty-seven State institutions,



administered by the State Department of Public Welfare, on Aug. 1, 1937, had 49,801 inmates. A new function of the Department is the administration of old age assistance (effective July 1, 1936). Old age pensions were being paid to 120,067 persons over 65 years of age in Sept. 1937, the number representing 28.5% of those 65 and over in the 1930 census. Total grants were \$1,990,950, an average of \$16.58 per recipient. County welfare departments to carry out local administration of the pensions, responsible to the State department, have been formed since July 1937. The administration of unemployment insurance was turned over to the Department of Labor. First payments were due from employers Jan. 1, 1938, as a lump sum settlement on 1937 payments. Thereafter, collections will be made monthly.

Unemployment relief, administered by the Illinois Emergency Relief Commission since Feb. 1932, reached a peak in March, 1935, when grants were made to 1,183,340 persons. In 1936, the average monthly number aided was 738,069, the average monthly cost per family being \$26.11. The number was materially reduced when the Federal Works Progress Administration undertook to give employment to able-bodied workers. On June 26, 1936, 160,062 persons certified from Illinois relief rolls were at work on WPA projects; on Nov. 3, 1937, 104,762 persons were so employed.

Employment on Federal projects and distribution of surplus commodities now comprise the chief Federal contributions to unemployment relief. Funds for direct relief come almost entirely from State and local sources. For the year ending June 30, 1937, such expenditures in Illinois totalled \$54,942,880.06. Of this, \$35,252,534.35 came from State funds and \$19,690,345 from local funds. State relief funds are derived from the Retailers' Occupation Tax.

**Banking and Finance.**—On March 31, 1937, there were 882 banks (573 State and 309 national) with loans of \$958,766,000, investments of \$1,805,915,000, and deposits of \$2,925,140,000. Analysis of the revenues of the State of Illinois for the fiscal year ending June 30, 1937 (total receipts, \$215,137,697) shows the most important source of funds to be the Retailers' Occupation Tax, or sales tax, amounting to \$77,003,381. One-third of this goes to unemployment relief, the remainder to various State expenses, including education and payments on bonds. The utilities tax for emergency relief amounted to \$4,321,629. The motor fuel tax, which yielded \$37,360,061, goes partly to payments on emergency relief bonds, but chiefly to roads. Motor vehicle licence fees, yielding \$20,892,391, with a slightly larger fund from Federal sources, also go to the road fund. The other heaviest revenue sources were liquor taxes and fees (\$10,635,731), corporation tax (\$3,207,268), insurance tax and fees (\$6,386,269), and Illinois Central, in virtue of its land grant (\$1,843,322). No direct property tax has been levied since 1932.



HENRY HORNER, governor of Illinois

**Agriculture.**—Illinois, with 88% of its area in farms (1938 census of agriculture), had an agricultural income in 1936 estimated at \$453,059,000. Even at lower prices, the figures were undoubtedly exceeded in 1937, when Illinois farms produced record crops. The corn yield of 46bu. per acre, an estimated total of 434,746,000bu., is the largest since crop statistics have been kept (1866), and is nearly double the crop of 1936. Production of soybeans was estimated at 21,918,000bu., probably more than 60% of the national crop. Latest livestock statistics are for 1936 and show a slight decrease in number, with the value about as in 1935. The total number of all livestock was then estimated at 8,512,000, valued at \$266,547,000.

**Manufactures, Mineral Production.**—Discovery of new oil fields in the State, which are expected to yield more than the well previously worked, was an outstanding development of 1937. Output for 1936 was 3,831,138bbls. of oil and 502,613,000 cu.ft. of gas, from 11,646 wells in twelve counties. The new fields lie in six counties stretching across the State to the east of St. Louis; in four of these counties no oil had previously been produced. Illinois coal mines, numbering 1,242, and lying in 58 counties, in 1936 produced 51,475,899 tons of coal. The total number of miners was approximately 49,000.

Based on the number of workers employed and amount of pay rolls, figures of the Illinois Department of Labor show a steady gain in industrial activity since 1933. Using the monthly earnings for 1925-27 as 100, statistics for 1933-37 are as follows—employees, 62.7, 71.4, 74.0, 80.0, 91.9; payrolls, 43.1, 52.6, 58.3, 67.0, 84.2. Certain industries such as agricultural implements, glass and glass products, machinery and tools, as well as road building, show a higher figure than for 1925-27. (T. C. PE.)

**Illinois, University of.** The University of Illinois, in 1937, marked the 70th anniversary of its chartering. An act establishing the university was passed by the Illinois State legislature Feb. 28, 1867, taking advantage of provisions of the Federal Morrill land grant college law. As the Illinois Industrial university, the institution opened March 1, 1868, with 50 students and three faculty members. It is located on the boundary of the adjoining cities of Urbana and Champaign in Champaign county, in Central Illinois. In 1870 women were admitted to the institution; in 1885 the name was changed to University of Illinois.

Enrolment has reached an all-time high, making this the fourth largest university in the nation. In the 1936-37 academic year, including extension work and the 1936 summer session, total enrolment was 15,831. The 1937 summer session set a record with 3,481 enrolled. First semester enrolment for 1937-38 topped all past marks with 12,496 resident students on the Urbana campus and 1,151 resident students on the Chicago campus, a semester total of 13,382.

Research was carried on in many fields, including medicine, engineering, chemistry, literature, the social sciences, and agriculture, with 13% of the operating funds devoted to organized research. The University of Illinois library is the largest of any State university, held fifth rank among American university libraries, and has more than 1,200,000 volumes. During the year 34,000 new volumes were added.

Graduate students during the first semester of 1937-38 totalled 1,220, with 107 of these in the colleges of medicine, pharmacy, and dentistry in Chicago, and the other 1,113 in the graduate school at Urbana.

For the 1937-38 academic year, the total university staff numbered 1,803. Of this total, 87 persons were listed as administrative, 1,116 as instructional, 140 as research, 56 as extension, and 80 as library workers. Clerks, technicians, and retired staff members



bers totalled 324. On the Urbana campus also were 104 fellows and scholars, 23 workers in related university organizations, and 146 workers in scientific surveys and State and Federal agencies, making the total number of campus workers 2,076.

No building was begun during the year 1937, but the final unit of the medical and dental colleges laboratories building in Chicago was completed and occupied. Total value of the university's physical plant is \$30,703,991. The State legislature appropriated \$10,154,102 from tax revenues for operation of the university during the 1937-39 biennium. This provides about 63 per cent of the university's income.

**Illiteracy.** During 1937 the nations of the world continued their efforts to reduce illiteracy. This was particularly true of the Soviet Republics, Turkey and the United States. The latest statistics from Russia reveal a decline which has reduced the 75% illiterate in 1895 to less than 30%. Turkey has similarly advanced under the stimulus of Kemal Attatürk's educational program, there being but 55.1% illiterate in 1934 as opposed to 91.8% in 1937. This improvement makes India and Egypt with over 80% illiteracy the most backward countries from which statistics are reported. British efforts to reduce these figures meet difficulties due to the tremendous number of the uneducated. Of European countries, Portugal and Spain present the poorest records, a fact undoubtedly contributing to the high illiteracy in South and Central American countries. An interesting comparison of national illiteracy standings may be gained from the record of foreign-born whites in the United States. In 1930, 9.9% of the foreign-born residents were illiterate with figures as to the nation of origin being reported as follows: Portugal, 34.7; Italy, 25.3; Poland, 19.0; Yugoslavia, 15.6; Turkey, 14.1; Spain, 14.0; Greece, 13.6; Russia, 11.3; Austria, 10.4; French Canadian, 9.9; Hungary, 9.8; Belgium, 6.4; France, 5.8; Germany, 3.2; Netherlands, 3.0; Norway, 2.0; Sweden, 1.5; Ireland, 1.4; Canadian other than French, .6; England, .6; and Scotland, .3. Recent figures to confirm the leading position of Great Britain are not available as reports were discontinued after 1914 when the number of persons unable to sign marriage registers was under 1%.

The United States possessed 4,283,753 illiterates over ten years of age in 1930, or 4.3% of the population of that age. The best record (.6%) was established by whites of foreign or mixed parentage, native whites having 1.8% illiterate, foreign-born whites having 9.9% and negroes having 16.3%. With two-thirds of the illiterate persons of either foreign or negro parentage, the problem was concentrated in the South and in city slums. Of nine geographical sections only the East South Central, the South Atlantic and the West South Central exceeded the U.S. average; while 80% of the illiterate foreigners were urban dwellers. Both of these problems were met during 1937 by the adult education program of the Works Progress Administration. In March, there were 241,048 adults studying in 22,779 classes under 5,785 teachers and officials reported that 700,000 had been removed from illiteracy lists since 1930. The goal for 1940 was a reduction of one million from the 1930 figure, which would place the percentage of illiteracy in the neighbourhood of 2.5%. Up to 1937 this work had cost over twenty million dollars, but the expense was balanced by the resulting decrease in relief rolls and an increased earning power which was estimated at one hundred million.

**Illumination:** see ELECTRICAL ENGINEERING; ELECTRIC LIGHTING; GAS; INTERIOR DECORATION: *Artificial Illumination.*

**I.L.O.:** see INTERNATIONAL LABOUR OFFICE.

**Immigration:** see POPULATION, MOVEMENTS OF.

**Imperial Conference.** The Imperial Conference of 1937 was held in London from May 14 to June 15. It was the first Imperial Conference since 1930, barring the Imperial Economic Conference held at Ottawa, Canada, in 1932.

The heads of delegations were: United Kingdom, Mr. Stanley Baldwin, succeeded by Mr. Neville Chamberlain when the latter became prime minister on May 28; Canada, Mr. W. L. Mackenzie King; Australia, Mr. J. A. Lyons; New Zealand, Mr. M. J. Savage; Union of South Africa, General J. B. M. Hertzog; India, the marquess of Zetland. Excepting Lord Zetland, who was secretary of State for India in the United Kingdom cabinet, all the above were prime ministers of their several countries. Southern Rhodesia and Burma were represented by observers, their respective chief delegates being Mr. G. M. Huggins, prime minister, and Dr. Ba Maw, chief minister.

The conference was occupied mainly with questions of foreign policy and defence. Though its publicly announced conclusions on these questions (see *Summary of Proceedings of Imperial Conference*, 1937, Cmd. 5482) were not remarkably novel or clear-cut, the discussions were recognized to have secured a valuable measure of mutual understanding, in the light of the world conditions that had arisen since 1930, particularly general rearmament and the difficulties of the League of Nations. "Emphasis was laid on the importance of developing the practice of communication and consultation between the respective Governments as a help to the co-ordination of policies."

The delegates, while entering into no definite commitments, and while reserving the right of their Governments to uphold their different statements of policy regarding the future of the League of Nations made at Geneva in Sept. 1936, "found themselves in close agreement upon a number of general propositions." These may be summarized as follows. The first objective of each member of the British commonwealth was the preservation of peace. The settlement of international differences should be sought by methods of co-operation, joint inquiry, and conciliation, in which, rather than in recourse to force, lay the surest guarantee for better international relations and the keeping of treaties. The armaments of the commonwealth nations would never be used for aggression or for any purpose inconsistent with the League Covenant or the Pact of Paris. The needed enlargement of the membership of the League would be facilitated by separating the Covenant from the Treaties of Peace. Regional agreements of friendship and collaboration were welcomed in so far as they could be made to contribute to the cause of peace and did not conflict with the League Covenant. An Australian proposal for a regional understanding and pact of non-aggression among the countries of the Pacific was approved in general terms. While the Governments represented wished earnestly for the widest possible measure of disarmament, they held themselves bound to adopt measures of defence essential for their security and for the fulfilment of their international obligations. In order to assist in reviving confidence and increasing economic and financial stability, they declared themselves ready to co-operate with other nations in examining current difficulties, including tariffs and other barriers to world trade and a higher standard of living. Finally, while themselves firmly attached to the principles of democracy, they held that differences of political creed should be no obstacle to friendly relations between governments and countries, and that nothing would be more damaging to hopes of peace than the division of the world into opposing groups.

The statement was interpreted as opposing a rigid interpretation of the sanctions aspect of the League's function; and as favouring an attempt at a settlement with Germany and other Powers.



The discussions on defence, as publicly revealed, consisted mainly of an exposition of national policies. Stress was laid on the advantages of co-operation in the supply of munitions and raw materials, as well as of food and feeding-stuffs, to the different countries of the commonwealth, and it was agreed that technical discussions on these lines should continue, subject to governmental freedom on issues of policy. The several Governments, it was noted, were aiming to create and maintain an adequate chain of air bases and re-fuelling stations along the lines of communication between the different parts of the empire. Other means of co-operation that were noted included the interchange of naval, military, and air force officers, and the education of officers at the Imperial Defence college in London. The conference was not called upon to consider detailed economic issues.

The further work of the conference included a review of colonial affairs, the acceptance of a report from the Imperial War Graves commission, the adoption of resolutions on the promotion of civil aviation and on relations with foreign air services, and the consideration of the future of the Imperial Shipping committee and other shipping questions, the future of the Imperial Economic committee, and co-operation in polar research. (H. V. H.)

**Imports:** see EXPORTS AND IMPORTS.

**Income Tax.** Recent income tax development in the United States has been in the direction of: (1) increasing the rôle of the tax; (2) modifying the basis for the corporation income tax; and (3) enhancing the effectiveness of income tax administration.

Federal income tax collections in the fiscal year ended June 30, 1937, amounted to \$2,149,000,000 or 41.8% of the total Federal internal revenue and customs. Individual and corporate income taxes shared approximately equally in this total. In other years, the collections from corporations generally exceeded those from individuals. State collections from these sources for the fiscal year 1937 are estimated to have amounted to nearly \$300,000,000 or approximately 10% of State receipts.

**Tax on Individuals.**—The Federal Government's individual income tax consists of a 4% normal tax and a surtax ranging from 4 to 75% applicable to incomes over \$4,000 after allowance for exemptions and credits. The personal exemptions allowed for both normal and surtax purposes are at present \$1,000 for a single person, \$2,500 for married persons and \$400 for dependents. The earned income credit, applicable against the normal tax, is at a rate of 10%, allowable only on amounts of earned income not in excess of \$14,000, with \$3,000 of income considered earned whether or not actually earned. These provisions serve to exempt single individuals with net incomes of \$1,111 or less and married persons of \$2,778 or less, if without dependents, and restrict income tax liability to comparatively few individuals—2,110,890 in 1935.

Income tax data for 1935 show that nearly 60% of the total net income reported by individuals was received by persons having less than \$5,000 net income each, and 92.6%, by persons having less than \$50,000 net income. On the other hand, due to the operation of the exemptions and the progressive surtax rates, persons with less than \$5,000 net income paid 6.1% of the total individual income taxes collected, and persons with less than \$50,000 net income, 45.6%.

A general income tax upon individuals is levied by 29 States. Five additional States tax particular sources of income. In all but one of the aforementioned 29 States, the rates are progressive, ranging from a minimum of 1 to 3% to a maximum of 3 to 15%. In addition, 5 of these States impose surtaxes at various rates. The maximum State income tax rate, including both normal and

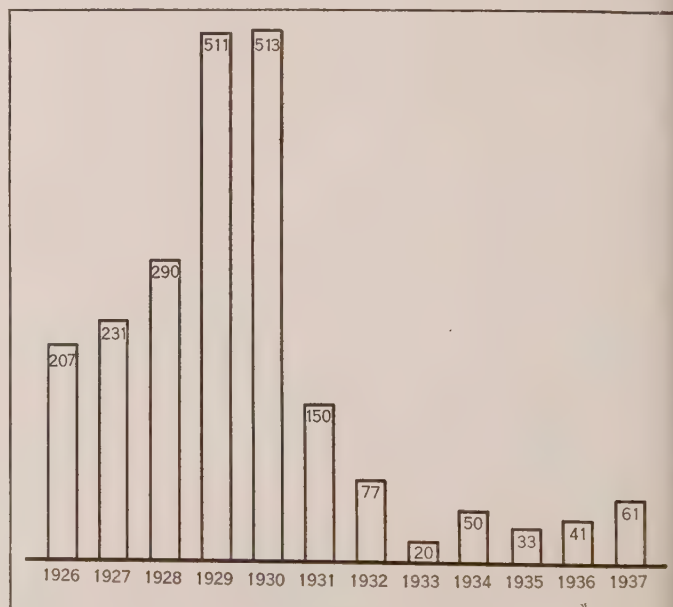
surtax, is 29%. On the whole, State income taxation is directed toward the low income groups, as is evidenced by the fact that the exemptions are below the Federal level in 12 out of 29 States in the case of single persons, in 19 States for married persons and in 21 States for dependents. Although some of the States preceded the Federal Government in employing the income tax, more than half the States now imposing it adopted it in 1929 and following years.

**Tax on Corporations.**—Federal corporate income tax rates are graduated from 8 to 15%, the top rate applying to the portion of income in excess of \$40,000. At the close of 1937 general corporation income taxes were also levied by 32 States, the rates usually ranging between 2 and 6%. Six of these States, like the Federal Government, imposed graduated rates—the other 26, flat rates.

In the past few years the basis of corporate income taxation by the Federal Government has been undergoing a process of modification. Until 1936, ordinary dividends distributed by domestic corporations were exempt from normal individual income tax (though not from surtax), indicating that in part at least the corporation income tax was regarded as a personal income tax at source. In 1936, however, dividends were made subject to the normal individual income tax, as well as to the surtax. In addition, Federal corporation income tax rates were graduated for the first time. Further, dividends received by corporations were made taxable to the extent of 15%. These innovations may indicate that the normal corporation income tax is now viewed by the Congress as essentially a corporate privilege tax rather than as an integral part of the personal income tax.

The States appear to have been in the forefront of the development towards the conception of the corporation income tax as a privilege tax. They were first in adopting graduated rates and developing and continuing the practice of taxing dividends under their individual income taxes. At present 19 States, including New York and California, tend to divest the corporation income tax of personal elements by subjecting dividends to individual income tax rates even though distributed by corporations subject to their own corporation income taxes.

In addition to the corporation normal income tax, the Federal Government in 1936 enacted a surtax on the undistributed profits of corporations, with rates graduated from 7 to 27% and dependent upon the degree of distribution of the profits. Under the in-



NUMBER OF INDIVIDUAL NET INCOMES of \$1,000,000 or more in the United States 1926-1937



individual income tax law in the United States the profits of corporations are taxable to shareholders only as they may be distributed and received in the form of dividends, whereas the profits of proprietorships and partnerships are taxable to the individual owners irrespective of distribution. The main objectives of the new undistributed profits tax were to provide needed revenue, and to make the individual income tax apply more uniformly as between corporate equity owners with interests in undistributed profits and those directly participating in businesses organized as proprietorships or partnerships.

From the inception of the income tax in the United States, efforts have been made to safeguard against tax avoidance through the use of corporations. From 1913 to 1920, the undistributed profits of corporations formed or availed of to prevent imposition of personal surtaxes were made taxable to the shareholders. In the Revenue Act of 1921 and later acts, this provision was replaced by a special tax upon such corporations. In 1934 these provisions were supplemented by surtaxes on personal holding or "private" companies as therein specifically defined. In 1937 the rates on such companies were increased to 65% on the first \$2,000 and 75% on the balance of undistributed income, and the provisions relating to such corporations were generally overhauled to minimize the avoidance of the individual surtax rates through this device. This was done through the disallowance of deductions attributable to such items as "incorporated yachts," "incorporated personal talents," and artificially created losses, interest charges, or business expenses. Further, the road to tax avoidance through the organization of foreign personal holding companies was blocked by requiring individuals to report for income tax purposes their pro rata shares in the profits of such companies irrespective of whether distributed or not.

In order to make more effective the administration of the income tax applicable to non-resident aliens and non-resident corporations and to equalize taxation between them and residents of the United States, the provisions pertaining to the taxation of non-residents were revised in 1936 and again in 1937. These revisions replaced the regular normal tax and surtax on income from sources within the United States, in the case of individuals, with a flat withholding rate of 10% on specified sources of fixed income (5% under treaty with Canada) where the income of the non-resident was \$21,600 (the point at which the effective rate for citizens and residents is 10%) or less; non-resident alien individuals with net incomes in excess of \$21,600 are taxable on their fixed sources of income at the normal tax and surtax rates applicable to citizens and residents. In the case of foreign corporations having no office or place of business here, a flat withholding rate of 15% on specified sources of fixed income (10% on dividends, except Canada, 5%) is applied. (See also EXCESS PROFITS TAX.)

(R. ML.)

**Great Britain.**—Taxes on income were first imposed in Great Britain in 1799, but abrogated between 1815 and 1842, since when such a tax has been continuously in force. Immediately before the World War, the standard rate was 1s. 2d. in the pound, but since 1918 it has never fallen below 4s. (1925-30), and in 1918-22 stood at its highest figure of 6s. in the pound. The 1938 standard rate, fixed by Budget of 1937, is 5s. in the pound.

Taxation is assessed on "assessable income," which is the actual amount of income, less one-fifth of the amount of "earned" income up to a maximum deduction of £300 for one person. Persons of 65 and upwards whose total income does not exceed £500 may likewise deduct one-fifth of their "unearned" income for assessment purposes. Those whose total income does not exceed £25 are wholly exempt from the tax.

Deductions from the assessable income are allowed as follows in order to ascertain the "taxable income": (1) A personal allow-

ance of £100, or if the taxpayer's wife is living with him, £180. (2) Four-fifths of the amount of any income earned by the wife, such additional allowance being limited to £45. (3) An allowance of £60 for each child (including step-children and adopted children) under 16, or over that age if receiving full-time educational instruction, provided the child has not in its own right an income exceeding £60 per annum. (4) An allowance of £50 to a widower or widow who has living with him or her a female relative (or under certain conditions a non-related female) as housekeeper or as guardian of children. (5) A similar allowance to an unmarried person who has living with him his mother or other female relative in charge of his brothers or sisters being children. (6) In certain circumstances, an allowance of £25 in respect of an infirm or incapacitated relative, a widowed mother-in-law, or a daughter who attends on the taxpayer.

The taxable income, thus arrived at, is chargeable at one-third of the standard rate of tax (*i.e.*, at present at 1s. 8d. in the pound) in respect of the first £135, the whole of the remainder being taxable at the full standard rate. Certain deductions are allowed in respect of life assurance premiums.

In addition to the income tax thus payable, surtax is charged on incomes exceeding £2,000. Surtax is payable on Jan. 1 of the year following the income tax year (which latter extends from April 6 to April 5). The surtax rates for the year 1936-37 (payable in 1938) are as follows:

For the first	£500 in excess of £2,000	1s. in the pound.
For the next	£500	1s. 3d. "
For the next	£1,000	2s. "
For the next	£1,000	3s. "
For the next	£1,000	3s. 6d. "
For the next	£2,000	4s. "
For the next	£2,000	5s. "
For the next	£5,000	5s. 6d. "
For the next	£5,000	6s. "
For the next	£10,000	6s. 6d. "
For the next	£20,000	7s. "
For the remainder		7s. 6d. "

Generally speaking, taxpayers who reside outside the United Kingdom can claim no reliefs or exemptions, unless they are British subjects, present or past servants of the Crown, or their widows, persons residing abroad for reasons of health, or those living in the Isle of Man or the Channel Islands; but relief is given in respect of income which is subject to income tax both in the United Kingdom and in a British Dominion.

Tax on earned incomes is payable half-yearly, on Jan. 1 and July 1; tax on unearned incomes is payable in one instalment on Jan. 1, as is tax payable by companies, which are not granted an allowance for earned income. Weekly wage-earners, other than clerks, typists, and similar employees, are assessed half-yearly and pay half-yearly.

The income of a wife living with her husband is considered for tax purposes as a part of his own; but children are separately assessable. Certain forms of income, including war pensions, scholarship income, interest on National Savings certificates, gifts (other than voluntary pensions), and profits from the sale of capital assets, are exempt from liability to tax.

The 1937 Finance Act provides that any amount payable as "National Defence Contribution" is allowable as a deduction from income for purposes of income tax.

In the case of investment income, tax is usually deducted at the source, and if the tax so deducted exceeds the taxpayer's total liability, he may recover the excess tax so paid. Claims for adjustment of tax may also be made in the event of business losses.

The receipts from income tax and surtax in 1936-37 were £257,237,000 and £53,540,000 respectively.

For 1937-38 they are estimated at £288,150,000 and £58,000,000 respectively.



**Independent Labour Party.** The I.L.P.'s membership increased somewhat during 1937 in Great Britain, and the party has now some 12,000 members and over 350 branches, principally in the west of Scotland, Lancashire, Yorkshire, and South Wales. Its political influence is considerably greater than is reflected by its numbers, for its four M.P.'s—Messrs. Maxton, Buchanan, McGovern, and Stephen, all from Glasgow—affect the debates in the House of Commons, and conditions in the trade unions and throughout the country. (L. H. D.)

**India,** a sub-continent projecting from the mainland of Asia, lies between the 8th and the 37th degrees of North latitude. It comprises 11 major or "autonomous" provinces, 5 minor areas directly administered by the central British Government, and a large number (between 500 and 600) of States under Indian rulers. The latter are scattered about the sub-continent, and vary greatly in size and importance, as well as in the powers enjoyed by their chiefs. British India (the 16 major provinces and minor areas) has its capital at Delhi, and is under a viceroy and governor-general (the Marquess of Linlithgow since April 1936), who is also the representative of the Crown in its relations with the States.

**Area and Population.**—The total area of India (from which Burma has now been separated) is 1,575,187 sq.mi., and its population (1931 census) 338,170,632. Males exceeded females by over 10,000,000. There are 862,679 sq.mi. and 256,859,787 souls in British India, and, in the States, 712,508 sq.mi. and 81,310,845 souls—a striking divergence in the density of population. Between the census of 1921 and that of 1931, the population had grown by nearly 32½ millions or 10.6%; the birth-rate of recent years being in the neighbourhood of 34 per thousand, and the death-rate about 23.

**History.**—In 1937, a new page was opened in the history of India. The constitution which, enacted by the British Parliament in 1935, came into operation in April 1937, is in some respects admittedly transitional; but it gave self-government to the peoples of India, and self-government is what they had never enjoyed before.

Its outstanding features are fourfold: (1) For the central Government of India a federation is to be established, comprising the provinces and those States which accede to the arrangement. There will be a federal legislature of two chambers; and from it will be drawn ministers to form the governor-general's cabinet and to conduct the Government of all-India in respect of federal subjects. (2) Each of the major provinces has an elected legislature (in six cases bi-cameral, in the others not), from which ministers are drawn who form the governor's cabinet and conduct the Government of the province in respect of provincial matters. The fields of all-India and of provincial administration are defined by the Act, and the powers which the rulers of States do not agree to transfer to the federation will be reserved to them in their Instruments of Accession. (3) Notwithstanding the above, the defence of India, its ecclesiastical affairs, and its external affairs except its relations with other parts of the British Empire, are retained in the hands of the governor-general and are not subject to either the federal or the provincial administrations. (4) There are certain "safeguards," or emergency powers, enabling in effect the governor-general and the governors, in their respective spheres, to overrule their ministers when urgently necessary in the interests of public order or good government.

Agitation for political rights had long outrun constitutional advance; and the Act of 1935, although it probably gave the Indian politician more than he had ever expected, was stigmatized by the Congress (advanced Nationalist) party as unacceptable

and an insult to Indian aspirations: a minority of the party contending that nothing would satisfy them except the complete severance of the British connection with India. When the general elections, however, were held for the new legislatures in January and February of 1937, the Congress threw its whole weight into the contest, with the result that its superior organization and political vitality secured a remarkable triumph, and its adherents obtained a majority of the seats in six out of the eleven provinces. There was no obligation to summon the new legislatures before Oct. 1; so the governors had time to form their cabinets, a task of some delicacy in the provinces dominated by the Congress. Minority Governments were got together in these six provinces, the Congressmen refusing to take office except on terms which would have been incompatible with the Act. Eventually, in some measure under Mr. Gandhi's influence, the Congress weakened and the governors were able to man their cabinets, in every province. The new Governments were thus in full working order everywhere before the year ended; and there were indications that the sense of ministerial responsibility and of patriotism was on the way to modify the fiery creed of non-co-operation.

The establishment of the new central Government did not fare so well. In the mood of exaltation which characterized that gathering, the Princes who attended the first Round Table Conference had acclaimed the idea of a federation. As practical details emerged, the romantic vision of a united India began to fade; and the limitations on the old autocratic powers of the Princes, which would be entailed by membership of a federal super-State, came into unwelcome prominence. At the same time, the Congress opened an attack on the principle: they would have no partnership with effete systems of personal rule: they would agree to a federation of democratic provinces, but to nothing more until the States had been granted popular Government. In these circumstances, the federation clauses of the new constitution have not yet become operative. They require the voluntary adhesion of the rulers of at least half the total population of the States; and there is no immediate prospect of this being secured. Meanwhile, the central Government is in the anomalous position of working on the old lines of an irremovable executive yoked to an irresponsible legislature. An important step, however, was taken in the inauguration (Dec. 1937) of a Federal Court, with an eminent British jurist, Sir Maurice Gwyer, as its first Chief Justice. The court has original jurisdiction in disputes between members of the federation or between the federation and any of its units. It has also appellate jurisdiction from any Indian high court, upon certificate from the court concerned in cases involving a substantial question of law as to the interpretation of the Constitution. It is probable that ultimately a much wider appellate power will be conferred on the court.

By the end of 1937, Indian ministers had hardly been long enough in the saddle to develop their administrative programs in detail; but several interesting measures had been taken in pursuance of the social reform which was promised in the election manifesto of Congress candidates. Two of those steps have already led to trouble, in the agricultural field and the labour field. The agrarian policy in most provinces aims at the reduction of tenants' rents and their protection from ejectment: in provinces where the landlord system prevails, this has seriously unsettled the agricultural population, while it threatens everywhere to undermine provincial finance, which owes much of its stability to the land revenue. Similarly, the Congress policy of improving the conditions of industrial labour has borne some of its first fruit in widespread strikes and labour unrest. The mills at Cawnpore suffered, in spite of efforts of the Congress ministry to reason with the strikers. In Calcutta also a strike movement was active. A less controversial plank in the Congress platform is prohibition;



and the Madras Government has introduced it experimentally in one district. Here also the financial reaction will be considerable, as the excise revenue is no unimportant feature in provincial budgets.

The Government has taken control of broadcasting, and has organized an all-India radio, intended to supply services in the chief vernaculars for the whole country; but at present only one inhabitant in 7,000 has a wireless licence. A short-wave relaying service for foreign transmission is being installed at Delhi. The film industry is making rapid advance, but is handicapped by shortage of capital. There are over 100 production companies, but only 700 cinemas in the whole country.

In external politics there was nothing eventful during the year. Indian sentiment was gratified by the election of H.H. the Aga Khan to preside over the League of Nations Assembly in Sept. 1937. The central legislature repudiated the Ottawa agreements so far as they affected India, and negotiations for a trade pact to replace them were in hand at the end of the year. The action of Japan in China is being watched with some apprehension. It has for the moment allayed the outcry of the extremists against the British army in India as an extravagant agency for work which could equally well be done by an Indian militia.

**Communications.**—The route mileage of open lines in India as a whole was over 43,000 mi., close on 39,000 of which belong to the State, though the agency and conditions of working vary largely. Roughly half the mileage is on the broad or 5½ ft. gauge, and the greater part of the other half on the metre gauge. The capital at charge was about £665 millions, and the return from State-owned lines in 1936–37 was as follows in £ millions: Gross traffic receipts, £71½; net receipts, £24.0; interest charges, £23.1; surplus, £0.9. For six years up to March 1936, there had been successive deficits in the railway revenues, aggregating 31½ crores (£23½ millions). The failure of the railways to render the assistance which had been expected from them to general revenues led to an exhaustive enquiry into the whole system by Sir Ralph Wedgwood, an eminent authority on British railways: his report was published in June 1937, but the decisions of the government upon it have not yet been completed. The competition of road traffic is beginning to cause similar difficulties to those experienced in other countries; but that motor transport is still in its infancy is evident from the following statistics, and from the fact that 1935 was the first year for which such figures were collected: cars (including taxis), 109,565; cycles, 12,411; buses, trucks, etc., 9,836.

**Agriculture and Minerals.**—Agriculture naturally has pride of place in India's economic structure. The world depression hit the Indian peasant very hard, and recovery, though it had started, was only partial in 1937. The slump, however, made no material change in the regular routine of seed-time and harvest: wheat, for example, though its export fell to about one-tenth of its former magnitude, continued to be the staple crop of northern India, covering an acreage of from 25 to 28 millions. Rice, however, with its wider range, and the tall millets which are grown for local consumption, occupy about 80 million and 40 million acres respectively. Oilseeds account for about 18 million acres, and cotton for 14 to 16 millions. The area under jute has declined with the serious set-back experienced by the industry, and operations in the tea gardens have been curtailed by the agreement with Ceylon and Java for the regulation of output. The export of these two commodities in 1936–37 was of the value of £32 millions (two-thirds manufactured and one-third raw), and £15 millions respectively. Sugar, on the other hand, has become an active industry, under a protective tariff, and the acreage of cane is now in the neighbourhood of 3½ millions, the output having doubled in the last 12 years. The total cultivated area in British India is 230 mil-

lion acres, about 15% of which carries more than one crop in the year.

Of the other natural resources of India, forest produce is prominent, as 12% of the area in the British provinces (excluding Burma) is under forests. Coal comes second, with an output in 1935 (the last year for which full figures are available) of 23,000,000 tons. Gold was mined to the extent of 326,000 fine ounces; but it is worked mainly in the State of Mysore. Nearly 6,000,000 fine ounces of silver were produced, and close on 2,000,000 tons of salt (Aden, however, contributing to this last figure). Iron ore showed an output of about 2½ million tons, and manganese of 640,000 tons. Bauxite, tungsten, and monazite are growing in importance; and there is an old-established petroleum business in Assam, with newer developments on the N.W. frontier.

Eight years ago the sea-borne trade of India was valued at £485,000,000: in 1936–37 it had shrunk to £282,000,000. But improvement was creeping in, and a favourable balance of trade was being restored on healthy lines. When the outside world found itself unable to buy from India the agricultural produce which used to be its staple export, India had to turn to other means of meeting its import bills; and the consequence was a prolonged drain upon the precious metals of which India has for ages been proverbially the sink. Twelve years ago the net imports of treasure (chiefly gold) was in the neighbourhood of £70,000,000. When bad times came, this position was completely reversed, and there was five years ago, a net export of £50,000,000 of treasure. Last year the net outflow had fallen to just over £11,000,000. During the slump, it has been estimated that India must have parted with at least £200,000,000 worth of its hoarded gold.

The balance of payments in 1936–37 for India's obligations abroad will be apparent from the following analysis of the sea-borne trade (figures in £1,000,000): imports: merchandise 95,793, treasure 11,614; exports: merchandise 151,922, treasure 22,305; excess of exports, 66,820. Great Britain provided 38% of the imports and took 31% of the exports: the corresponding figures for the U.S. were 6½% and 9½% respectively.

Apart from the general response to world conditions which helped the upward movement of industry in 1937, the rearmament of Europe was not without some indirect effect, especially on the prices of iron and steel. A more direct fillip, however, was provided by Japan: she was too busy with her military enterprise in China to pour the usual flood of cotton goods into India, and the Bombay mill-owners have enjoyed an unusual run of prosperity.

**Banking and Finance.**—The unit of currency, the rupee, is a silver coin of 180 grains troy, eleven-twelfths fine, and linked to sterling at a parity of 1s. 6d. There is a variety of fractional coinage, the rupee being divided into 16 annas, and the anna into 4 pice or 12 pies. A lakh of rupees is 100,000 (£7,500), and 100 lakhs make a crore (£750,000). Currency notes from one rupee to 10,000 rupees in denomination circulate to the number of about 120,000,000. Throughout 1937, the trade balance kept the rupee steadily above its sterling parity.

The public debt of the central Government is distributed between India (539.8 crores) and England (£276,000,000). The provincial governments have now their own borrowing powers, though only Bombay, the United Provinces, and Punjab have so far come on the market. An indication of the strength of India's financial credit is afforded by its latest rupee loan in May 1936, when 12 crores, redeemable in 1948–52, were raised at par on an interest basis of 2½%.

The budget estimates for 1937–38 gave the following totals (£000)—revenue: central 89,564; provincial 62,935; total 152,499. Expenditure: central 89,510; provincial 62,821; total 152,331. There are two topics of perennial controversy between the



central and the provincial governments: the obligation of the former to assist deficit provinces, and the allocation of the proceeds of taxation on incomes. An award on both points has been issued by Sir Otto Niemeyer, a British treasury expert, and is still under discussion. Customs continues to be the mainstay of the central revenues: the tariff varies widely round a general standard of 25% *ad valorem*, rising to 50% and over for certain luxury articles (cars, cigars, wireless sets, confectionery, plate, etc.), and becoming severely protective for sugar, matches, silk and cotton fabrics, iron and steel. For sugar, the protection is so effective that an excise duty has been imposed on its local manufacture as some contribution to the loss of revenue on its import.

The banking system is being rapidly transformed from the old indigenous lines to modern methods. In 1934 (later figures are not available) there were 34 Indian joint stock banks, each with capital and reserve of over 5 lakhs (£37,500), and a large number of smaller concerns. Besides these there were 33 co-operative banks, the 18 exchange banks which have their head offices outside India, and the Imperial bank of India at the top of the tree. The new Reserve bank is now fully established and has taken over the whole of its currency and other functions.

**Religion and Language.**—In the matter of religion, Hinduism claims 239,000,000 and Islam 77,000,000: there are roughly 7½ millions of Animists, 6,000,000 Christians, and 4½ million Sikhs; the Parsees, though important in business, being a small community of barely over 100,000. India is sometimes described as a land of 200 languages; but the statement is misleading, as many of the diverse tongues are merely tribal dialects spoken on the Assam and Burma frontiers. Of the others, however, 23 are important enough to be spoken each by over 100,000 people; and there are at least a dozen distinct alphabets. The largest linguistic group is formed by variants of Hindi, spoken by 108,000,000; and Bengali comes next with 53,000,000. Urdu (or Hindustani) is an admixture of Persian and Hindi origin widely spoken, and understood more widely, over northern India, besides being a useful *lingua franca* in other parts of the country. The statistics of literacy are not too trustworthy; but at the 1931 census 1 male in every 7 and 1 female in every 56 were returned as literate in their own vernacular; while 1 man in 42 and 1 woman in 430 were acquainted with English.

Calcutta, the capital of India until Delhi was given that dignity in 1911, is the most populous city (pop. 1,485,582 in 1931) and the second largest in the British Empire. Next in importance come the two old Presidency towns, Bombay (1,161,383) and Madras (647,230). There are 10 other cities with a population of over a quarter of a million each, and 26 others with between 100,000 and 250,000 inhabitants. This sufficiently indicates how small a fraction of the total is the urban population.

**Defence.**—The regular army in India comprises about 60,000 British and 140,000 Indian troops. There is also an auxiliary force (European) of about 24,000; and the Indian Territorials are about 18,000 strong. Finally, the Indian Army Reserve can call on about 35,000 men. Forces maintained by the Indian States number some 45,000 in all, and can in emergency be put under the orders of the Government of India. There are now 8 squadrons of the Royal Air Force stationed in India, with one bomber transport flight. An Indian air force was constituted in 1932. The old Royal Indian marine was formed into a Royal Indian navy in 1934, and is now a purely combatant naval service, consisting of a depot ship, 5 sloops, and 3 minor craft, commanded by a vice-admiral of the Royal navy. (ME.)

**Indiana,** a north central State of the United States, popularly known as the "Hoosier State." Population (estimated July 1, 1937), 3,474,000 (3,238,503 in 1930). The death

rate for the year 1937 was 11.7 per 1,000, a decrease of .5 from 1936, and the birth rate was 16, an increase of .5 (State Board of Health). The majority of the population had become urban (55.5% in 1930). The largest cities (with their 1930 population) are: Indianapolis, the capital, 364,611; Fort Wayne, 114,946; South Bend, 104,193; Evansville, 102,249; Gary, 100,426. Indiana is one of the most "American" of States; 96.2% of its population in 1930 were white, and of the whites 92% were natives. The centre of



M. C. TOWNSEND, governor of Indiana

population of the United States has been located in it for more than 40 years; it is now near Linton, Greene county.

**History.**—Under an important decision of the State Supreme Court in 1935, reversing former practice, amendments to the constitution receiving a majority of the votes cast upon them (regardless of the number voting for candidates in the election) become part of the constitution. In Nov. 1936 an amendment was ratified permitting negroes to serve in the militia.

Since 1933 the Democratic Party has controlled the legislative, executive and judicial branches of the State Government. The administration of Paul V. McNutt (Jan. 1933—Jan. 1937) concentrated all appointive power directly in the governor as political patronage, grouped the many State offices and institutions into eight departments, levied a tax on gross income and from it gave State aid to public schools, repealed State prohibition and developed a system of licensing the manufacture, importation and sale of intoxicants designed to prevent the return of the saloon. In 1937, under Governor M. Clifford Townsend, the State Department of Public Welfare and county departments of public welfare were created, the personnel of both being selected by the merit system. The State distribution to public school teachers, also, was increased to \$700 annually for each teaching unit.

By the co-operation of the Federal Government old-age pensions are now granted, unemployment compensation has been provided for (payments begin in 1938), and other measures of public welfare and social security have been effected. A Federal homestead settlement at Decatur, and a Federal housing project for coloured people in Indianapolis were completed in 1937.

The State Constitution prohibits the contraction of any State debt except in three cases; the State on June 30, 1937, had an accumulated balance of \$47,544,763; the total true receipts for the fiscal year ending then were \$114,653,348, the total true disbursements \$104,785,384. Receipts from the gross income tax have increased steadily from \$10,388,014 reported in 1934, to \$20,556,656 in 1937.

**Education.**—The consolidation of small schools into larger units continues with a reduction of 243 in 1937. The requirement of a four-year college course for teachers' licences in elementary schools has been adopted, effective in 1940. Perhaps the most notable step in cultural progress during the year was the development of the Indiana Symphony Orchestra, Indianapolis, into a first-class organization with Fabien Sevitzky as conductor.

**Agriculture and Manufacture.**—The economic development of Indiana is diversified, the two leading occupations being, in order, manufacture and agriculture. The depression, though



very serious, was not as severe there as in many other States. The Calumet region, along Lake Michigan, with its steel mills, rolling mills, iron and steel blast-furnaces, and petroleum refineries ranks first as an industrial area, followed, with extremely diversified manufactures, by Indianapolis, Fort Wayne and South Bend. Corn was the largest crop in 1937, as usual; but practically all of the farm products of the middle temperate zone are being produced in quantity; the cultivation of soy beans is increasing; the so-called muck farms and gardens of Northern Indiana are proving extremely productive.

Approximately 7,000 mi. of steam railroad continue in operation. Electrical railroads, formerly very extensive, have, for the most part, been abandoned or are operated by receivers. The State highway system (9,168 mi. in June 1937, of which 4,860 are of high surface type) and the great extent of surfaced county roads (the largest mileage of any State) bear an increasing part of the traffic—in 1936 there were licensed 736,073 passenger automobiles, 122,215 trucks, and 962 buses. The State is now crossed by five transcontinental air lines, three serving Indianapolis, which has an important municipal airport.

Labour troubles were frequent in the earlier part of 1937. The most serious strikes, in the steel industry in Lake county, were settled by both sides reaching agreements with Governor Townsend as intermediary, a plan which attracted national attention. At the end of 1937 the Indiana Federation of Labor claimed 202 local unions with 25,000 members, and the Committee on Industrial Organization a still larger number.

The Ohio river flood of Jan. 1937 inflicted great suffering and loss upon most of the Indiana cities on the river, the greatest upon Jeffersonville. The town of Leavenworth (about 600 population) was abandoned for a better location; other cities repaired the damage. (C. B. C.)

**Indians, American.** Fundamental changes in the relationship of the American Indian to the Federal Government have taken place during the five years between 1932 and 1937. Not all Indian tribes have experienced the changes equally. The Indian Reorganization Act of June 18, 1934 has been the organic structure within which many of these modifications have become possible.

All Indian tribes were self-governing when they first experienced white contact. They lost many of these rights under wardship status. The new Federal statute offers the Indians of today the opportunity to revive or continue their tribal type of organization as a governmental unit under law. The law is optional, not mandatory, and each tribe was required to accept or reject by a secret ballot vote of the Act before June 18, 1936. Of equal importance with the self-government features of the law are credit provisions, which enable chartered tribes to secure Federal funds for use by the tribal corporation or reloan to individual Indians.

The fifty-year-old policy of allotting Indian lands to individuals and allowing those individuals to sell their holdings is reversed. About twenty-two million acres of the best Indian lands were lost through alienation. The new law forbids the sale of Indian tribal lands, and individual Indian lands may only be sold in extreme emergency. New lands are being bought, and an effort is being made to acquire for tribal use the Indian lands which through inheritance have become useless to any individual.

On the 130 recognized Federal jurisdictions within the continental United States, 189 groups have already availed themselves of the new law and are in various stages of organization. Twenty-seven groups have rejected the Act. In 1937, Congress appropriated \$4,000,000 of the \$12,000,000 credit money authorized by the Act for loan to organized tribes.

Recognition of the ravages of erosion on overgrazed Indian lands has led, during the same period of time, to active cooperation of the Federal Soil Conservation Service with the Indian office in putting into effect, with Indian assistance, better practices of range management and erosion control. This work has been most significant among the tribes of Arizona and New Mexico.

A gradual reorientation of the Indian school program has greatly increased the number of children in Federal day schools or public schools near their homes and has reduced both the number of boarding schools and the number of children enrolled on a boarding basis. Enrollment in secondary vocational schools has more than doubled during this period, and a great deal of emphasis has been placed upon equipping Indian children with skills which will enable them to make a living through exploitation of the natural resources reserved to Indians. (W. W. B.)

**Indo-China, French:** see FRENCH INDO-CHINA.

**Industrial Research.** Self-sufficiency in their industries is the research aim of many countries. Nevertheless in a few fields—tin and silver are examples—national frontiers are ignored in industrial research. The researchful rayon industry has had phenomenal success, and the annual world production is now sufficient to make one full-length garment, using three yards of material, for every person on earth. Permanent water-repellents and crush-proof processes for textile fabrics received much attention in 1937. Novel synthetics brought a new era to solvents, paints, plastics, and perfumes. Research on problems of industrial hygiene went forward and laboratories devoted to this work were established by many organizations. Air-conditioning investigations included mechanisms of evaporation of water, drying, and equipment. Designs were prepared for underground bombproof power plants for Europe's chemical industries.

Let us make a hasty inspection trip to the leading nations, visiting them in alphabetical order, to glance at the industrial research under way and to learn about some of the outstanding results in each country.

Manufactures of Canada, embracing power and transportation, petroleum, Trail industries (both metals and heavy chemicals), precious metal recovery, radium, aluminium, cobalt, selenium and tellurium, pulp and paper, sodium and phosphorus compounds, acetylene generation and synthetic products from acetylene, refractories and cement, and textiles, are carrying on extensive scientific research. Since Canada has become an important producer and world supplier of radium, the international price has declined about 50%. The National Research Council of Canada is demonstrating the high value of basic scientific investigation in national welfare; its accomplishments constitute a source of pride to the Dominion. During 1937 some seventy original contributions on physical and chemical topics were published in the *Canadian Journal of Research*. Various Canadian universities are busily engaged on sundry agricultural problems.

In Czechoslovakia, the Coal Research Institute in Prague studied the reactivity of coke and the Glass Research Institute at Hradec Kralove the standardization of lead glass. Athermal glass (to secure "cold light" in buildings) was developed at Billin, and, like the United States, Czechoslovakia took up seriously the production of glass fibres. Synthetic resins, pharmaceuticals, lacquers, explosives, and rayon strengthened their positions through research. Investigations on synthetic rubber were especially active.

Industrial research in France related mainly to dyestuffs, heavy chemicals, naval stores, essential oils, perfumery and toilet prep-



arations, fertilizers, and wines. Synthesis as connected with gasoline, coke-oven gas, and coal distillation made considerable advance. Through other research, progress was accomplished in producing the vat series of fast colours and many dyewares were introduced for acetate rayon. France is enlarging her cellulose industry and during the year commercialized the Sindl process of making uniform cellulose triacetate.

As for Germany, all industrial research positions under the German Ministry of Education are unified; the Reich Research Council, which plans all investigations, now has jurisdiction over about 1,000 research organizations. Plastics, rubber, textiles, fats, cellulose, and metals are getting main attention. German research was especially active during 1937 in the fields of alloys, synthetic resins and rubber, tanning materials, and art goods. Calcium chloride and sodium silicate were tried for reinforcing shifting sands and other loose formations under building foundations. German engineers were energetic in promoting the use of magnesium alloys and in utilizing previously unworked iron ores. Word came of a new process for rapid saponification; the "Igepals" are new detergents of German origin; a German factory is making soap from fat derived from coal; the solution of problems of producing fatty acids economically from petroleum is being zealously sought. German technologists introduced more refined processes in the coking industry of the Ruhr, increasing yields, particularly of benzene. By one process, we are informed, about 80% of the sulphur produced in coking can be recovered. Lately Germany has turned to anthracene as a raw material for making carbon black. German chemists demonstrated that coal-tar oils can be used as fuel for Diesel engines, if there are added small amounts of "Kogasin," an intermediate product of the Fischer synthetic gasoline process. A new process for the manufacture of triacetylcellulose was announced. Germany is engaged in building up a large synthetic rubber industry, based on a product termed "Buna." Leather-like products from plastics were developed. A new German raw material for varnishes and plastics is cellulose acetobutyrate, and a novel German plastic is "Astralon," a cousin of American "Vinylite." A new chemical filter material and fibre ("Zellwolle") appeared, as did new developers of the pyrogallol series.

In Great Britain the Department of Scientific and Industrial Research, through the organizations working productively under its aegis, added bountifully to scientific and technological progress. The British Nonferrous Metals Research Association reported work on the properties of lead and lead alloys in relation to important uses, published research on the effects of impurities in copper, and described the mechanical properties of magnesium alloys at elevated temperatures. The Building Research Board, active for eleven years, made substantial progress toward the solution of problems involved in the use of such constructional materials as cement, stones, plaster, and mortars. Wood preservatives were investigated broadly by the Forest Products Research Board. Advances in lubrication were considered thoroughly by the Institution of Mechanical Engineers in a symposium of 140 papers. A new liquefied petroleum gas was introduced and the search for petroleum in Great Britain was continued. Further progress in low-temperature carbonization of coal and in oxidizing ethylene with air was reported. The Rothamstead experimental station paid much attention to insecticides and weed killers and to liming of soils. The Medical Research Council investigated the health effects of industrial solvents. The Food Investigation Board has been studying problems in the transport and storage of food, and has under development the shipment of tropical fruits, especially conveyance under gas storage. The growth of plastics revived the manufacture of synthetic phenol, dormant since the World War. The Water Pollution Research Board worked on the

use of synthetic resins for water softening. A firm announced a process whereby a wool-like character can be given to rayon staple fibres and "Velan PF," a new water-repellent material for textiles was exhibited. All the varied interests of the dye consumer are covered by British specialists.

In Hungary, the demand for aluminium has fired the ambition of Hungarian scientists to find new methods of ore location and treatment. The availability of agricultural wastes for motor fuel is being studied in this country, which produces no gasoline, and a quest for petroleum is likewise being carried on.

In India, the Institute of Science gave out results of five years of research on the utilization of cane molasses and also described sirup and soap from cashew. A jute research laboratory was opened in Calcutta. The Government's Industrial Research Bureau published a broad study of Indian vegetable oils. The Lal Research Institute at Namkum, established in 1935, is investigating shellac.

Italy claims self-sufficiency in nitrogen products, now having thirteen nitrogen-fixation plants. Much scientific attention was accorded to the explosives and heavy chemicals industries, and improvements were made in the production of barium sulfate and titanium oxide. Tuscan soffioni are being used to produce electrical energy, borax, and boric acid. The Florence Experimental Institute made optical glass. A new process applied in Cogne is said to harden ordinary mild steel without tempering. The production of synthetic gasoline and lubricants by hydrogenation of coal advanced to the commercial stage. The tannin and dye resources of Ethiopia were studied, a synthetic rubber research institute capitalized at two million lire was reported, and a company set aside six million lire to study rubber substitutes and six million for research on cables. The textile industry has been well developed by science, and the utilization of by-products of wine culture is being investigated.

Magnesium industrialists of Japan are said to be trying new methods of electrolysis. A coal liquefaction process was described after sixteen years of research, and investigations on petroleum refining and on electrochemical products have been active. Use for shark oil were found, among them as a lubricant in aeroplane motors. Japanese manufacturers of paper, other cellulose products, textiles, dyes, and plastics are going forward through research. A process for making fibre from seaweed has been reported.

In Sweden research was started on the utilization of feldspar a new process for producing and briquetting charcoal was worked out, and the value of arsenic preparations in preserving wood was investigated. Swedish scientists also embarked upon research on the use of straw for industrial purposes.

In the United States, during 1936 and 1937, about \$350,000,000 was spent by the process industries in buying modern equipment to replace antiquated machinery, and in constructing new plants to enlarge production facilities. The heavy chemicals, pulp and paper, rayon and transparent wrapping film, coke and manufactured gas, petroleum refining, and distilling industries have been foremost in this industrial development. American railroads are experimenting on light-weight equipment, from the rails up. Physicists are endeavouring to introduce their services to the industries and a new periodical, *Journal of Applied Physics*, made its appearance in January, 1937. The Farm Chemurgic Council is forming State councils. Battelle Memorial Institute principally concerned in fuel and metallurgical research, expanded its facilities. The new building of Mellon Institute was dedicated. A number of large educational and company laboratories were erected during the year.

Some of the accomplishments of research during 1937 may be mentioned. Spodumene was put to work to produce lithium chloride for use in the conditioning and drying of air. A device



Employing sound waves to combat smoke and fumes was announced by the Bureau of Mines. A new inorganic cement and adhesive ("Hubbellite") and a new series of super-refractories ("Monofrax") were developed. A novel synthetic insulating compound was introduced for cables; a new flame-proofing material for textile fabrics and paper was announced. New plastics came in both liquid and powdered forms. The largest plastic piece ever moulded, a reflector 26½ in. in diameter and 11½ in. in depth, was produced from the synthetic resin "Plaskon." Food preservation is being investigated on a large scale.

Among other recent American research creations are new adhesives from synthetic resins; cellulose sponge; new pigment dyes; novel emulsifying agents; "Triton B," an organic base; new plasticizers, such as naphthyl-beta-mercaptan for rubber; plastic wood; rapid drying ink; morpholine, a new solvent; "Tergitols," compounds for use as wetting agents; tetraphosphoric acid; a titanium silicate pigment; electrolytically coloured metals; and synthetic ascorbic acid (vitamin C) prepared from sorbitol, which, in turn, is made from corn sugar.

Vitamin A is being produced from fish-liver oils by molecular distillation.

U.S.S.R. has been showing definite growth in technical publications. In 1937, the "Third Five-Year Plan" for industrial research was formulated by the Academy of Science, and the Soviet continued to progress in research on oil-shale, peat, fertilizers, synthetic nitrogen, synthetic rubber, soaps, essential oils, and pharmaceuticals. Attempts to gasify coal underground were renewed.

As to industrial research in other countries, Australia has a Productive Council for Scientific and Industrial Research, active for eleven years. Austria studied its petroleum, whose production has been increasing. The Ministry of Agriculture of Brazil described deposits of tantalum, beryllium, uranium, and rare earths in that country. The characteristics of copal resins were also investigated in Brazil. German chemists are aiding Brazilian authorities in an effort to discover uses for surplus coffee. The Minister of Public Health of Chile decreed after research that table salt for human consumption shall contain 4% of sodium phosphate, owing to lack of phosphorus in the Chilean diet. An Academy of Technical Sciences was formed in Denmark to encourage industrial research. Research in Norway, on the production of refractories from rocks such as chrysolite and serpentine by fusion with magnesia, was divulged in the literature.

The production of whale-liver oil gave promise of becoming an important Norwegian industry. Switzerland maintained a pre-eminent position in research on fine chemicals, especially pharmaceuticals.

(E. R. W.)

## Infantile Paralysis.

Nearly thirty years ago, Dr. Karl Landsteiner, of Vienna, transmitted infantile paralysis from children to apes and monkeys, and proved that the disease was caused by a virus too small to be seen by the most powerful microscope. The past two years have seen the confirmation of a discovery nearly as important as Landsteiner's, which made it possible to study this disease in the laboratory. This new discovery has revealed a curious trait, really a weakness of the virus that gives hope of a successful mass attack upon it. It now appears to be certain that this extremely minute wrecker of nerve cells can propagate itself and travel through the bodies of monkeys and men only inside of nerve cells and nerves. If that is true then, except in rare instances, the paralyzing invader has only one gateway into human beings; and that is by way of the tiny endings of the nerves of smell, high up inside the nose. If this is the only means of entry of the invisible virus, may there not then be some means of blockading against it?

In the experimental infantile paralysis of monkeys, a most powerful and simple way of protecting these animals against the virus has been discovered by American investigators, Charles Armstrong and Edwin W. Schultz. Mixtures of picric acid and alum, instilled into monkeys' noses, guard a great majority of these animals from heavy inoculations of infantile paralysis virus for at least one week.

Better yet, one per cent zinc sulphate solution—harmless to monkeys and men—protects nearly one hundred per cent of monkeys against repeated and overwhelming inoculations of deadly virus for one month and often for two months. Will it be possible by means of this solidly confirmed laboratory science, to protect children against epidemic attacks by the virus?

The field test of this hopeful science is an extremely difficult one because of the relatively small number of human beings attacked in the most severe epidemics. This makes it necessary to test any hoped-for preventive upon very large numbers of people, very rapidly, because infantile paralysis epidemics are explosive, rising to their peaks suddenly, and quickly fading away. Simple means of applying zinc sulphate to children, by practising physicians under the direction of specialists are now being worked out. The recently organized National Infantile Paralysis Foundation is going to make a truly adequate human field test of the experimentally powerful preventive possible. Funds furnished by the foundation will make possible the mobilization of an infantile paralysis-fighting army of physicians and nurses, working in concert with Federal, State and local health men. The next three years should bring the answer to this question: will what works for monkeys work for men?

(P. DE K.)

**Infant Mortality.** The most common method of measuring the mortality of children under one year is to relate the infant deaths in a calendar year to the births in the same calendar year. This infant mortality rate exceeded 300 per 1,000 in Bavaria and Württemberg in the '70s, and it is probably still as high today in large parts of Africa and Asia. The rate has been below 50 in Norway since 1929, in Sweden since 1933, in Holland since 1931, in Switzerland since 1932, in Australia since 1929, and in New Zealand since 1920.

In the United States, England, and the Union of South Africa (whites), it is about 60.

Infant mortality rates in 25 countries for the years 1932-33-34, as reported by the U.S. Bureau of the Census, the latest comparable, official figures that include the U.S.

	1932	1933	1934
United States . . . . .	57.6	58.1	60.1
England & Wales . . . . .	65.	63.7	58.6
Australia . . . . .	41.3	39.5	..
British Guiana . . . . .	138.8	154.2	168.5
British India . . . . .	168.7	..	..
Belgium . . . . .	87.4	85.4	..
Canada . . . . .	73.3	73.1	..
Chile . . . . .	235.	257.9	261.9
Denmark . . . . .	79.5	67.6	64.4
Scotland . . . . .	86.2	81.1	77.7
Finland . . . . .	70.9	81.7	73.
France . . . . .	77.	..	..
Germany . . . . .	79.2	76.6	..
Irish Free State . . . . .	72.2	65.2	63.3
Italy . . . . .	110.	100.1	..
Japan . . . . .	117.5	121.3	..
The Netherlands . . . . .	40.3	43.9	42.6
Lithuania . . . . .	166.7	121.3	165.5
New Zealand . . . . .	31.2	31.6	32.1
Northern Ireland . . . . .	83.	79.7	69.7
Norway . . . . .	46.8	47.6	..
Sweden . . . . .	50.7	..	..
Estonia . . . . .	96.8	94.	91.1
Ceylon . . . . .	162.3	157.2	173.
Colombia . . . . .	106.4	..	..

(R. R. K.)



**Inflation.** No catastrophic inflation occurred during 1937. In the absence of unmistakable instances, the existence of inflation may be a matter of opinion. Currency inflation is recognizable either by its ultimate cause (unbalanced budgets or other public policy involving an expanded credit base) or by its intermediate effect (expansion of currency and credit in circulation), or by its secondary effect (a general rise in prices, not caused by diminishing returns, monopoly, or restriction of supply). Examples of all these phenomena were present in 1937.

In the United States, an unbalanced budget was counteracted by the building-up of social security funds. The realized budgetary deficit in 1936-37 was \$2,811 millions. The ordinary British budget was balanced, but rearmament borrowing was begun on a scale of £400 millions in five years. Any inflationary effect, however, was offset by the accumulation of reserves in the unemployment insurance fund and increases of other Government-controlled funds. In France, the Government proposed to balance the budget in 1938 after a sequence of deficits, but France had also a large extra-budgetary armament program. Big defensive expenditures, financed by credit, were a feature of the economies of Germany, Italy, and certain other countries, invalidating their published budget figures.

The conflict in China inevitably caused an inflationary increase of Japan's governmental spending.

In the United States, neither money in circulation nor bank deposits showed any significant rise. A rise in British currency circulation was common in 1937. Bank of England notes in circulation rose from £467 millions at the end of 1936 to £505 millions 12 months later, although some hoards of notes held on continental account had been liquidated meanwhile. In France, following a sharp depreciation of the franc, the volume of notes in circulation rose from 85,985 million francs in June 1937 to 91,370 million francs in September. The German note circulation rose from r.m. 6,653 millions in September 1936 to r.m. 7,259 millions 12 months later. A similar annual rise of around 10% was common, for instance, in Argentina, Japan, the Netherlands, Norway, and Sweden. No such rise, however, could be called inflationary, and in other countries, such as Austria and Belgium, the note circulation fell.

The inflation of prices in 1937 was indubitable but temporary. Thus, wholesale prices of primary products in Great Britain rose by more than 20% between November 1936 and March 1937 but fell back to their former levels within a few months. There was a parallel inflation and deflation of stock-market prices both in London and in Wall street.

(H. V. H.)

**Inner Mongolia:** *see* MONGOLIA.

**Insanity.** Advances in psychiatry in 1937 have largely been made in the field of experimental therapy. Sakel's insulin hypoglycemic shock treatment of schizophrenia, originally used by him in Vienna in 1933 and first reported in 1934, has been widely adopted in other clinics throughout the world. The results are promising and the association between insulin treatment and clinical improvement is occasionally very striking. Published statistics, however, must be regarded at present as tentative in view of the difficulties in the diagnosis of schizophrenia and the variability in spontaneous reactions which the disease often shows in response to physical and psychologic treatment, or no treatment at all. Although Sakel's method is violent and sometimes dangerous, one is justified in using it in such a serious disorder. Psychiatrists are unable to say that the favourable results, when obtained, are permanent. Transient improvements of a similar nature have been observed after the administration of high percentages of carbon dioxide and other forms of treatment

used in the past. Another form of "shock" treatment has been under investigation in 1937. Meduna of Budapest has used "convulsive therapy" induced by rapid intravenous injections of metrazol, a drug similar in action to camphor, producing epileptiform seizures. It is claimed that after a period of confusion and somnolence the patient's mental condition is greatly improved. One or two reports from other investigators are favourable, but the treatment is too new to evaluate. Finally, the reports on the use of theelin in involuntional melancholia, a disease of the climacteric, continue to be favourable and recovery, when large doses are given, has occurred in upwards of ninety per cent of patients with this affliction, the period of hospitalization, at the same time being reduced by one-half.

Work has continued on the surgical treatment of the psychoses, as advocated by Moniz in 1936. Destruction of some of the numerous connecting fibres of the frontal lobes has led to amelioration of such symptoms as anxiety, apprehension, nervous tension and insomnia. This radical method of treatment is still under investigation and has not been widely used. No conclusions, except great caution, are justified at present.

Another investigation during the year was the continued study of the action potentials of the brain with the recording of them by the electroencephalogram. These researches have led to important conclusions regarding epilepsy, sleep and cerebral localization of function. All investigators have found a spontaneous cerebral rhythm, which can be recorded as an electrical current from electrodes placed on the scalp. The normal rhythm, about ten per second, reveals some inborn feature or pattern of cerebral activity, not understood at present. The electroencephalograms appear to conform to the biological law of similarity of identical twins.

In disease, certain wave changes are pathognomonic of petit mal, a form of epilepsy. Investigation of electroencephalograms of patients with mental deficiency and psychoses reveals certain changes not yet interpreted. There are indications, however, that such studies may aid in the estimation of the severity of the psychosis and as a measure of therapeutic efficacy.

A most important field of research has not been neglected. With many modern forms of treatment now in use for a considerable period of time, thoughtful physicians are attempting to evaluate the results of their endeavours. Psychoanalysis, the most complicated therapeutic measure employed at present, is felt by most workers to be valuable in a selected group of patients suffering from the more severe forms of the minor psychoses. In general hospitals, where only modified psychotherapy can be used, about sixty per cent of the patients are considered to be improved as the result of treatment in an established ambulatory psychiatric clinic. More than one-half of the patients with neuroses may be improved with something less than "intensive psychotherapy" of the psychoanalytical type.

Thus, the more simple methods of treatment are not to be discarded, in spite of the acknowledged value of psychoanalysis in certain cases.

In general, as diagnosis and classification of the psychoses become more fixed, research turns towards the therapeutic field. The work of 1937 is encouraging, for not only has much been accomplished, but many new pathways of investigation have been opened, many of which appear to offer great promise.

(H. R. V.)

**Insects:** *see* ENTOMOLOGY.

**Institute of Chemistry:** *see* CHEMISTRY, INSTITUTE OF.

**Institute of Pacific Relations:** *see* PACIFIC RELATIONS, INSTITUTE OF.

**Institute of Physics:** *see* PHYSICS, INSTITUTE OF.



**Insulation**, or any material designed specifically to prevent heat loss or heat penetration, has been strictly a product of industrial progress. The first recorded use of insulation for the purpose of conserving heat to do useful work was when James Watt bound strips of wood around the boiler of the first practical steam engine, invented by him in 1765. At that time and for well over a century afterward, fuel was plentiful and cheap, and as a result, very little necessity was seen for any insulation at all.

Since that time industrial progress has been predicated upon man's increasing ability to harness heat to do useful work. In time this progress brought the development of open hearth furnaces, ceramic kilns and other high temperature furnaces where insulation is not only desirable in order to keep production costs low, but a necessity in order to make possible many industrial processes based on reactions which take place within narrow temperature ranges, and which could not be successfully carried on at all without the close temperature control made possible by insulation.

The insulation industry has kept pace with industrial progress to the extent that today there is a type and form of insulation available to meet every industrial need. These advances in insulation are conservatively estimated to save industry well over \$300,000,000 annually.

Industrial insulations available today may be divided into three main groups. (1) High temperature insulations (above 1,000°F.), which control heat used in making steel, glass, petroleum products, cement and other products in wide every day use. (2) Moderate temperature insulations (from 100° to 1,000°F.) for conserving heat in boiler drums, steam lines, heated tanks, etc. (3) Low temperature insulations (sub-zero to 100°F.) for preventing heat penetration into refrigerated spaces and into cold water or refrigeration piping.

The most recent advance in the industrial insulation field has been the development of insulating refractories, now being produced by both insulation and refractory manufacturers. This type of material combines the advantages of both insulation and refractory. Where conditions permit the use of this type of material, considerable savings in furnace construction and operating costs can be effected.

The greatest progress in recent years, however, has been in the development of insulations scientifically designed to increase man's comfort. These insulations include materials for insulating homes, automobiles, aeroplanes and automobile trailers. Home insulation in the past decade has become an industry in itself, and with air conditioning, which necessitates the use of insulation to be fully effective, rapidly increasing, the insulation of homes seems sure to become more and more important. Materials available for home insulation include rock wool and similar materials in blanket, loose and nodulated or granule forms, and reflective type insulation.

Of interest because of the increasing desirability of fireproof ship construction is the recent development of a light weight, fireproof insulating material specifically for use aboard ships.

(L. H. BR.)

## Insurance, Accident and Automobile.

A glance at the 1937 accident statistics for the United States explains the popularity among Americans of accident insurance, for in that year 106,000 persons were killed in all types of accidents, 375,000 injured permanently and 9,400,000 injured temporarily. Doubtless the publicity accorded these tragedies made the country accident-conscious and therefore helped to build the accident insurance business to its present status where it ranks

third in the field of casualty insurance, with a premium volume in 1936 of \$99,826,696, exceeded only by automobile liability and workmen's compensation insurance.

Accident insurance, dating back to 1850, indemnifies an individual or his beneficiary for financial loss caused by accidental bodily injuries to himself. There are three major forms written: commercial, industrial and non-cancellable, but the latter form has been discarded by most companies because it has proved highly unprofitable, with commercial accident policies achieving the greatest degree of popular support. Accident and Health Insurance Week, occurring in the latter part of April and for several years past an annual observance in the United States, definitely stimulates the public consciousness insurance-wise.

Automobile insurance is another development more or less peculiar to American insurance needs and methods, offering a five-fold protection: fire and transportation; theft; collision; public liability and property damage. Of these, perhaps collision is the only form that has, strangely enough, decreased in popularity. Ever since the world's first automobile policy was written, February 1, 1898, automobile insurance has increased spectacularly in the United States until it is now the chief source of premium income for casualty insurance companies and contributes 25% to fire insurance premium volume. In 1936, automobile liability insurance premiums totalled \$279,120,129, while those for automobile property damage insurance were \$78,432,904. Motor vehicle premiums for fire insurance companies reached the total of \$168,810,633. Estimates based on early returns for 1937 indicate an increase of approximately 8% for casualty companies and 4.5% for fire companies.

Experience on automobile insurance was profitable in 1937 despite the fact that accident fatalities increased. Factors leading to this result were an adequate rate level; continued nation-wide work in safety education; a trend toward stricter motor vehicle regulations, and renewed vigilance of insurance carriers co-operating with public prosecutors in running down fraudulent claimants. During the closing months of 1937 one outstanding development threw the automobile insurance picture into sharper focus. This was the plan authored by the National Bureau of Casualty & Surety Underwriters, a rating organization sponsored by 38 member companies operating in the United States and Canada. This proposal, similar to that used in England, offers a return of 15% of the premium to drivers whose record for the year is free of accidents or claims. There has been considerable opposition to this plan, chiefly from insurance agents and brokers, as well as proportionate approval, chiefly from automobile owners.

(T. J. V. C.)

**Great Britain.**—The year 1937 has seen a sustained expansion in the turnover of business written in the accident department, which has applied in greater or less degree in all countries of the world. The predominant cause of this has been the continued growth of motor insurance, which holds the leading place among the various sections of the business. The total premiums written by British offices in motor insurance during 1936 as disclosed in the reports published during 1937 amounted to £35,210,019. This business was derived from all parts of the world, since British insurance interests are on an international basis. The largest national market for motor insurance is in the United States, which country possesses far more motor vehicles than any other country.

The experience of motor insurance as disclosed during the year was not very profitable, though in England an aggregate profit of 3.4% was secured. Continental motor insurance has been unprofitable for a number of years, particularly in France and central Europe, though some improvement was recorded last year. The cause of the difficulties is the increase in the number of road



accidents and the sharply upward trend of their average cost. Rates of premium have not been advanced enough to keep pace with the increased claim strain. This applies particularly to the third-party liability in connection with the rise of motor vehicles.

Personal accident insurance, the third principal section of accident business, includes also insurance against disablement through disease or sickness. The experience has been variable, with an increased claims cost in many countries due to the greater street hazard associated with increased traffic. The premiums written by British offices during 1936 amounted to £3,541,214, and the trading showed a profit of 5.5%. Personal accident insurance is treated differently in different countries. The scales of benefits payable are differently constructed, while each country has its



SWEDISH MODERN FURNITURE developed in 1937. The upholstery fabrics, rugs and glass are also of Swedish design

own methods of classifying risks and computing premiums. In England the business is profitable, but on the continent of Europe it has been much less favourable. (See also FIRE INSURANCE; LIFE INSURANCE; MARINE INSURANCE.) (C. E. G.)

**Insurance, Old Age:** see SOCIAL SECURITY.

**Intelligence Tests:** see APPLIED PSYCHOLOGY: *Intelligence Tests*.

**Inter-Allied Debts:** see WAR DEBTS.

**Interior, Department of the:** see GOVERNMENT DEPARTMENTS AND BUREAUS.

**Interior Decoration,** apart from that in "period" styles (for which see *Encyclopædia Britannica* vol. 12, 474-96), has exhibited simple but bold manipulation of surfaces and masses in keeping with the mathematical lines of modern exterior architecture. For embellishment, excrescences remain out of favour, and designed patterns have continued largely to give place to the exploitation of plain colours, though of unexampled richness and variety, and above all of the texture or figuration inherent in the myriad materials now available, whether plaster, timber, or fabric. With mouldings in banishment, the flush door rules; floors, walls, and ceilings show unbroken surfaces and tones; furniture is long and low. Only in hangings is the feeling for pattern indulged; curtains, indeed, display kaleidoscopic intricacy.

**Floors.**—For a bare floor, with or without small rugs, parquet is ideal. In default, laminated parquetry may be laid on an ex-



isting floor, or, if this is of satisfactory timber and (as it should be) secret nailed, it may be finished with one of the polish-stains made for the purpose. Plain "battleship" linoleum and rubber (increasingly) have their adherents. These and carpets give warmth, and the last, if laid over an underfelt, even on indifferent flooring, wear. For kitchens and bathrooms patent composition floorings are also in vogue; for the latter cork parquet excels.

**Walls.**—Smooth or textured plasters may be finished in distemper (preferably oil-bound), or oil-paint or cellulose lacquer, dull or glossy, often sprayed on. Spraying opens up wide possibilities in the application of metallic dusting or a transparent finishing coat of a contrasting tone. Wall-papers, though some are discreetly patterned, frequently re-

on texture too, some simulating linen or leather. Actual linens and canvases are sometimes used. Plywood can be applied in matched veneers even on extensive wall-surfaces.

The choice of hangings is almost limitless. Picturesque fabrics including some of peasant origin, are on the market from all over the world; tapestries in imitation of stained glass are an example.

If the fireplace is retained, it is usually built flush; but it is largely giving way to the electric or gas fire, also sunk flush, or well above floor-level, in the wall.

For pictures the comparative smallness and lowness of modern apartments gives sparing occasion. But mirrors are used decoratively, and glass panels, perhaps etched or engraved and illuminated with concealed tinted lights.

**Furniture.**—Furniture of today is clean of outline and, as far as may be, without legs. The wooden pieces might have been tooled into cubes and slabs, with rounded edges and corners the only concession by the machine. The style relies on showing up the natural figure of the wood. Very beautiful timbers, hitherto little known, are brought from the world's forests; veneers of a variety on laminated wood cores are widely used by cabinet makers, usually matched and sometimes inlaid. Clear cellulose lacquer gives a finish indestructible and equal in appearance to that of French polish. In upholstered work a little more latitude of form is allowed. The cylinder may be combined with the block, the squabs may depart from strict rectangularity, and they will be inclined at easy angles—for comfort is studied as never before. In really small rooms built-in furniture saves space.

**Artificial Illumination.**—Concealed lighting is prevalent. Few modern rooms have cornices, but deep bowls, either on movable standards or affixed to walls, project flood-lights to be reflected



from the plain white ceiling. Strip-lights, too, lend themselves to concealment—for example, within picture-frames or even under table-tops and so forth, or may be mounted in troughs designed for them.

(H. Fw.)

## International Labour Office.

The I.L.O. in 1937 represented 62 States, including all the leading countries except Germany. Italy, however, following her resignation from the League, resigned at the end of the year. The U.S.A., the U.S.S.R., and Japan are all members, the two former being recent recruits. During the year 1936-37 there were, in all, 50 ratifications of conventions adopted by the I.L.O., including eleven by Great Britain, of which six dealt with age and widows' pensions and sickness insurance, and none involved any substantial advance on existing British practice. In general, the progress made with ratifications remained very slow. Fourteen of the fifty came from South and Central America, and only thirteen from continental Europe.

The 1937 conference of the I.L.O. was concerned largely with proposals for the adoption of the 40-hour week, subject to certain modifications and exceptions, in the textile, chemical, and mining industries, and with the planning of public works as a means of preventing unemployment. The draft convention for the textile industry was accepted by the necessary two-thirds majority (88 votes to 41); but the conventions for the chemical and printing industries, though approved by a majority of the delegates, fell short of the requisite two-thirds, and were accordingly not carried. The conference approved resolutions dealing with the rational planning of public works in advance, in order to combat trade depressions, and with international co-operation in respect of public works. It also revised the earlier convention dealing with the minimum age of employment for children in industrial and non-industrial occupations, with the general object of raising the minimum age from 14 to 15.

The governing body of the I.L.O., as elected in 1937, consists of 16 Government members (representing U.S.A., Canada, France, Great Britain, India, Italy, Japan, U.S.S.R., Brazil, Chile, China, Mexico, Norway, Poland, Spain, and Yugoslavia); 8 employers' delegates (from Great Britain, France, Denmark, Italy, India, Yugoslavia, South Africa, U.S.A.); and 8 workers' delegates (from Great Britain, France, U.S.A., Belgium, India, Japan, Spain, Sweden); together with substitute members from a number of other countries.

The I.L.O. now publishes, in addition to the *I.L.O. Year Book*, separate *Year Book of Labour Statistics*, as well as the monthly *International Labour Review* and its various series of studies and reports dealing with particular subjects. It remains integrally connected with the League of Nations, all League states being automatically members of the I.L.O., as well as certain others (e.g. the U.S.A.). Representation at conferences is in the proportion of two Government delegates, one employers' delegate and one workers' delegate from each country, though some countries (14 in 1937) are in fact represented only by Government delegates. Each delegation is allowed the use of substitute members, in order that it may be represented by persons expert in particular subjects discussed. States are obliged to submit to I.L.O. conventions to their respective parliaments (or other appropriate bodies); but each state is free to ratify any convention or not. In all, up to March 1937, the I.L.O. had adopted 14 conventions, and registered 739 ratifications, including 30 from Great Britain.

(G. D. H. C.)

## International Law.

Perhaps the most significant event of a year not noted for renunciation of foreign claims, is the coming into force of three of the con-

ventions signed at the Hague Codification Conference of 1930. Each of these conventions has now been ratified by the required ten or more countries.

The principal convention, relating to certain conflicts of nationality laws, facilitates renunciation or waiver of one's nationality, by the person himself or by the country with the lesser claims, in certain cases of dual nationality. For example, third States are to recognize exclusively the single nationality of the country in which the dual national is habitually resident or most closely connected. The chapter on the nationality of married women provides for a limitation in the number of cases of dual nationality or statelessness arising through marriage. Children of unknown parents or parents of no or unknown nationality shall take the nationality of the place of birth. Among the ten States that have now ratified, the largest are Great Britain, India, China and Brazil.

The convention of most interest to and the only one ratified by the United States, is that relating to military obligations in cases of dual nationality. Adopting a principle long urged by the United States, this provides that a person having dual or multiple nationality shall be bound to perform military service only in that country in which he habitually resides or with which he is most closely connected. Among the Powers which have ratified this convention in addition to the United States, are Great Britain, Brazil, India, Australia, and South Africa. It has not been ratified by France, Italy or Switzerland, with which the United States has had the most difficulties in this matter of military service.

A third convention provides that in countries not conferring their nationality *jure soli*, a person born of a mother who was a citizen and of a father without nationality or of unknown nationality shall have the nationality of the country of birth. This has been adopted by Great Britain, Brazil and several of the British dominions. This is already law in the United States.

**War in China.**—This conflict has raised some interesting legal questions. War was not declared either by Japan or China, but in this they have tradition behind them. War is a fact, and does not depend on declaration or the name given it.

It is doubtful whether the Nine-Power Treaty has really been violated, for the "territorial and administrative integrity of China" which the signatories agreed to "respect," has not actually existed since 1842, when the western Powers began to encroach upon it by territorial seizures, tariff limitations and armed occupations of Chinese territory.

The British Government sent a well-framed note to Japan protesting against the bombing on an open road of the British Ambassador to China, on the ground that it was "wanton" and therefore illegal promiscuously to bomb civilians outside a war area, and emphasizing again the fundamental distinction between combatants and non-combatants.

The "Panay," an American gunboat on the Yangtze river, was sunk on Dec. 12 by Japanese bombs together with some American-owned oil barges. Three American lives were lost. British ships were also struck, with loss of life. In both cases Japan disavowed the bombing, attributed it to a mistake, and offered indemnities and guarantees against repetition. An American note of Dec. 25 warned Japan against any further attack on American nationals, property or interests. If this is intended to include attacks in war zones, it goes beyond the exactions of international law and may give rise to difficulties.

**Civil War.**—The Spanish Civil War raised a number of important questions. The Non-intervention Committee at London, with the announced purpose of preventing the spread of the conflict, undertook to bar arms, ammunition and implements of war from both Loyalists and rebels. The United States followed suit by a resolution of Jan. 9, 1937, now formally adopted as part



of the Neutrality Act. The refusal of countries to supply the recognized Spanish Government with arms, but on the contrary to deal with rebels and Loyalists as if they were on an equal footing, raised the question whether this was not a breach of international law, which requires friendly Governments to help a constituent Government, at least by continued trade in arms, to resist a rebellion. (See also NON-INTERVENTION COMMITTEE.)

On the other hand, the long-continued bargaining whether the belligerency of the Franco rebels should be recognized (as a condition of the withdrawal of outside "volunteers") was probably also a departure from international law; for after July, 1937, when Franco controlled two-thirds of Spain and of its population, the rebels could hardly legally be denied the status of a belligerent. The supersession of political considerations upon the legal questions made the case unique. Germany and Italy indeed in 1936 had recognized Franco as the only Government of Spain, and had assisted Franco with material aid. This was clearly an act of political intervention. Finally, when merchantships on their way to Barcelona and other Loyalist ports were sunk at sight in the Mediterranean, the Powers met at Nyon to take measures to stop these acts of "piracy," for the identity of the attacking vessels remained undisclosed and no Government would assume responsibility for them. (See also MEDITERRANEAN, THE.)

Incidental to the Spanish War, the Loyalists attempted to requisition Spanish merchantships in various foreign ports and take possession thereof through Spanish consuls. In some of these cases the owners filed a libel to recover possession of their vessels, and the question arose whether the Spanish requisitioning decree could be given effect abroad. In the case of the "Navemar" requisitioned in Argentina and brought to New York and there libeled, the Circuit Court of Appeals gave effect to the decree partly on the ground that a ship is part of a nation's territory, that the change of ownership had been recognized in the Argentine, that

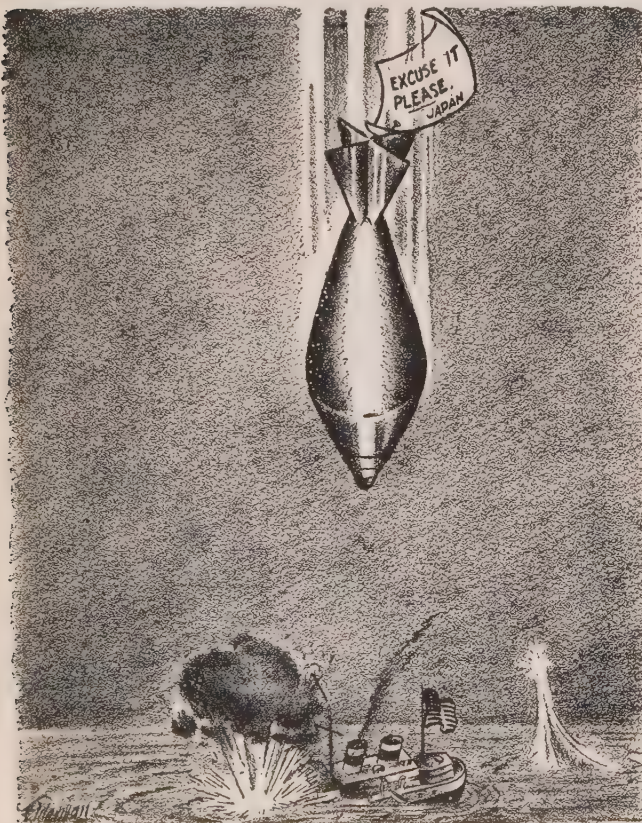


"SANK ONE OF HIS OWN, TOO," says Lewis the cartoonist in *The Milwaukee Journal*

the allegation of the public character of the vessel advanced by the Spanish Ambassador could not be disputed in an American court, and that the ship under the Spanish flag was "within Spanish jurisdiction" (90 Fed. (2d) 673). The case is under appeal to the Supreme Court. In a test case in England, the "Christina" (5 Lloyd's Law Reports 1), a somewhat similar conclusion was reached.

The question of ships is different from that of private property on land. Conflicting claims to the ownership of property sent out of Spain under Government orders have come before the French courts. These courts protected the rights of the person whom they found to be the legal owner under rules of French private law. This was the case with a consignment of potassium sent from Barcelona to Marseilles, *Moulin et al. v. Volatron*, 64 Clunet 531. See also *Rousse v. Banque d'Espagne*, 1937, Dalloz Rec. Heb. 461.

**Private Property.**—American and British courts in 1937 dealt with a number of other interesting cases involving private property in international law. Under the Roosevelt-Litvinoff Agreement of 1933, assigning to the United States the assets of Soviet Russia in the United States, the Attorney General brought suit against Belmont & Company, bankers, claiming title to a bank deposit made before 1918 by the Petrograd Metal Works. The United States claimed that the Soviet Government had purported to dissolve Russian corporations and confiscate their property and assets. The U.S. Supreme Court held, with doubtful validity (30 U.S. 324), that the Russian decree purported to confiscate the bank deposit in New York, that it could legally do so, and that the United States by executive agreement could become the successor in interest of the Soviet. The case arose on a motion to dismiss without opportunity for the original owners of the deposit to be heard. For that a new action will be necessary. The Belmont case is unique among the Western nations.



"JUST TO AVERT MISUNDERSTANDINGS." Polite apologies cannot justify, explain or atone for a bombing tragedy, cartoons Elderman in *The Washington Post*



Another chapter was written in England to the Finnish ship claims. During the war in 1915 some thirteen Finnish ships were requisitioned in Great Britain on authority of the then Russian Government. The owners claimed compensation from Great Britain under the Indemnity Act. Losing the case, on the ground that Russia was liable, Finland brought their cases before the Council of the League under Article 11 of the Covenant on the ground that the issue jeopardized the friendly relations of two countries, Finland and Great Britain.

The Council rejected the claim, although in the meantime the issue gave rise to an arbitration involving the question whether the Finnish owners had exhausted their local remedies in England. To this an affirmative answer was given by the arbitrator, Judge Hagge, of the Supreme Court of Sweden, in a notable opinion exploring the local remedy rule. The Finnish shipowners, turned down at Geneva, then began suit in the King's Bench in England against Baring Brothers, bankers of the old Russian Government, claiming a declaratory judgment that both before and after the Soviet Revolution the Russian authorities had given the owners an assignment of part of the funds on deposit with Baring Brothers. Mr. Justice Luxmoore denied that an assignment had been proved (*London Times*, Nov. 20, 1937).

**Recognition and Non-recognition.**—Although at Geneva Great Britain and other Powers agreed in 1936 not to recognize Italy's conquest of Ethiopia, the exigency of practical affairs required different decisions. In 1937, ousted officials of the Bank of Ethiopia brought in England an action for a debt owed to the bank by an Egyptian bank. The British Foreign Office, on request, advised the Court that the Italian control of Ethiopia had been recognized *de facto*. Thereupon the Court held that only the Italian liquidator of the Bank could represent it to collect debts. *Bank of Ethiopia v. National Bank of Egypt* (53 Law Times 751). Thus, the doctrine of non-recognition of obvious facts suffered further impairment. As it is rather impractical and creates more political disorder than it allays, it probably ought to disappear in due course. (E. Bd.)

**International Trade.** At the end of Sept. 1936, the Tripartite Monetary Agreement was signed between Great Britain, France, and the United States. Under its signatories promised to assist each other to maintain monetary stability, and also to refrain from competitive currency depreciation. It was rapidly adhered to by other countries, and is generally heralded as providing a new basis for the freeing and revival of international trade.

How have these hopes so far been fulfilled? The story of 1937 must clearly take this as its starting-point, but it is equally necessary to have regard to the background of the tripartite agreement. This takes us back to 1931-32, the years in which Great Britain abandoned the gold standard and introduced her tariff; the years when many countries first introduced exchange restrictions and imposed quantitative quotas upon imports of many commodities.

The history of 1931-36 must first be summarized. In England there was the change over to protection in 1932. This was followed by the Ottawa agreement, under which the various members of the British Empire gave each other preferential duties on various classes of goods. Now, clearly if England gives Australia a preference of 15% in respect of certain imports from Australia, England must impose a duty of at least 15% upon imports from other countries, or else the Australian preference cannot be maintained in full, even if the Australian goods are let in duty-free. Ottawa was followed by commercial treaties between England and certain foreign countries, such as the Scandinavian powers, Germany, and Argentina, under which mutual concessions in respect

of duties and import quotas were made. It was also followed at home by measures to organize the production and marketing of certain classes of British agricultural produce, and these entailed fresh control over imports, both by way of duty and of quota. In certain cases such as wheat, a duty was levied on imports for the purpose of subsidizing the home producer. Meanwhile, the United States was busy negotiating commercial treaties with foreign powers, while the depression and the glut of such commodities as cotton, tin, and rubber led to the introduction of national or international schemes for the control of production, and these in turn affected international trade.

During all this time, Central Europe, the Balkans, and most of South America were enmeshed in a network of exchange restrictions, exchange clearings, and trade on a compensation or barter basis. Exchange restrictions began with a desire to maintain the gold value of the currency, and were applied first to prevent movements of capital out of the country, including the payment of debts due to foreigners. Then imports were restricted, both by direct quotas and also by the refusal to allot the foreign exchange needed to pay for them. Conversely all foreign exchange received by exporters and others had to be surrendered to the authorities. Next attempts were made to organize fresh foreign trade. In some cases payments agreements were concluded, under which the "weak" or restricted country determined its imports from any "strong" country solely by reference to its exports to that country. In other cases, clearing agreements between two "weak" countries laid down that importers in each country should pay for their goods in their own country, the payments being made into a special clearing account kept at their central bank. Exporters were paid out of this account. Then there were various forms of "compensation" trade, where importers and exporters got together, so that one drew on the currency obtained by the other. The essence of all these arrangements was to canalize trade country by country, with the inevitable consequence of a contraction in the total flow of world trade.

The world recovery of 1933-37 brought some easement. Austria was able to remove practically all her exchange restrictions, though she was forced to maintain the clearing agreements with many of her neighbours. Argentina relaxed her restrictions. In other cases, while the machinery of restriction remained, it operated more easily.

This brings us to the beginning of 1937. During the past year there were two important developments. The first was the visit of M. van Zeeland, who was then prime minister of Belgium, to France, England, the United States, and other countries. His visit was initiated by the British and French governments, and its object was to explore ways of bringing about a general reduction in tariffs and relaxation of import quotas and exchange restrictions.

M. van Zeeland was peculiarly suitable for this task, for Belgium together with Holland and the Scandinavian powers, had taken the lead in the low-tariff group movement of previous years. This had the object of concluding multilateral trade agreements between a group of countries, instead of bilateral agreements between countries in pairs.

It broke down, however, partly because of the Ottawa agreement embracing the British Empire—in itself a low-tariff group; partly because England insisted on her most-favoured-nation rights under existing treaties; partly because the United States believed solely in bilateral agreements; and partly because the time was not ripe for a general freeing of world trade. M. van Zeeland has been faced with a long and arduous task, for he has had to try to reconcile national and international interests, and he has realized the futility of formulating proposals which would not be generally acceptable. Nevertheless at the beginning of 1938 there were indications that he might be reaching the point where



he could put forward a definite scheme for the general relaxation of trade and exchange restrictions.

More important were the Anglo-American trade discussions. These had long been envisaged on both sides of the Atlantic, but the first tangible step was Mr. Runciman's visit to America in Jan. 1937. It was quickly clear that some modification of the Ottawa agreements would be necessary, and so the Dominions had to be brought into the discussions. A fair amount of secrecy attended the next move, but it is now clear that the question was discussed at the Imperial conference held at the time of the coronation. The Australian premier asked, however, that no overt move should be made until after the Australian elections, due to be held in the autumn of 1937. As it would have been most undesirable for the Anglo-American trade discussions to have been made an issue in a Dominion general election, this request was at once acceded to. In consequence, there was no fresh move until the late autumn.

On Nov. 18 it was officially stated that the discussions had reached the point where formal negotiations between the British and United States governments could begin. This statement received an immediate welcome from the Canadian and Australian governments. And so the position stood at the end of the year. It was clear that there would be much sectional opposition on both sides of the Atlantic, but it was equally clear that the governments concerned envisaged a successful end to the negotiations and the conclusion of a treaty embodying substantial concessions on both sides. Furthermore, as the treaty would contain the most-favoured-nation clause, most of the concessions would extend to many other countries besides the British Empire and the United States. Thus at the end of the year the Tripartite Monetary Agreement of 1936 appeared to be leading to one substantial result.

Unfortunately, there were comparatively few signs of relaxation on the part of the countries with exchange restrictions. Germany, the chief of the restricted countries, was pulled by conflicting aims. Her chief proclaimed need was for essential raw materials which she could not produce at home; and this need was emphasized by the general expansion in home industrial activity under the Nazi régime. But in the absence of any willingness to devalue the mark or revert to a free economic system, she had to measure her permitted imports by her exports; and for various reasons the recovery in her export trade fell short of her general recovery. Therefore, on the one hand she tried to give priority to those raw material imports needed by her export industries. On the other hand, she tried to make herself, through the invention and manufacture of substitutes, less dependent upon raw material imports. These aims were not wholly reconcilable, for raw material imports were needed for the factories built in pursuance of her self-sufficiency aims, and also for rearmament, which constituted a third claim upon her import trade. These divergent aims to some extent found expression in divergent schools of thought. The announcement in late 1936 and the vigorous execution since, of the second four-year plan marks the triumph of the self-sufficiency school, for that is the plan's declared objective. Certain changes in ministerial personnel at the end of 1937 may also point in the same direction.

Looking backwards from the end of 1937, things are beginning to move, but the movement is very slow. The recovery during 1933-37 in world prices and world trade has permitted some degree of relaxation, and Brazil's decision, in Nov. 1937, to place her export coffee trade upon a competitive basis is the latest example of this. Much depends on the success both of M. van Zeeland's mission and of the Anglo-American negotiations, and "success" in the latter case, means not merely a treaty but a treaty drawn on wide and generous lines, embracing a large number of important commodities. Something too depends upon whether Ger-

many, in co-operation with other countries, can find a way of combining freer external trade and exchange with her internal economic, social and indeed, political aims. Finally, much depends upon whether world currencies, and particularly the franc, can maintain a fair degree of stability, with the ultimate possibility of *de jure* stabilization as well as *de facto* stability. These are the problems for 1938 and subsequent years. (N. E. C.)

## Interstate Commerce Commission.

The financial situation of the railroads in the United States in 1937 and the need for larger revenues to meet increased expenses required and received consideration by the Interstate Commerce Commission. During the early part of the year the improvement in business conditions and the increase in the traffic of the railroads were encouraging, but during the latter half of the year railroad tonnage and revenues declined below the 1936 level, while increases in the wages paid employees, new taxes to provide the funds for unemployment compensation and retirement pensions, and higher cost of fuel, supplies and equipment added fully \$500,000,000 per annum to expenses. The railroads were not in condition to cope with the situation. For the railroads as a whole, the rate of return on property investment in 1937 was only 2.3%, or less than half the rate required for successful management and development, while companies owning 28% of the total railway mileage were insolvent and were being operated by receivers or trustees appointed by the courts.

Toward the end of 1936 the Commission refused to continue in effect after Jan. 1, 1937, a temporary emergency increase in railroad rates granted in April 1935. This reduced the carriers' freight receipts about \$120,000,000 per annum. The carriers petitioned for increases in the rates on specified basic commodities; the Commission held hearings thereon in the spring but not until October 19 were the carriers authorized to file tariffs, which became effective in November and December, providing for an estimated increase of \$60,000,000 to \$65,000,000 in annual revenue.

The situation of the railroads became progressively worse during the last four months of 1937 and the carriers, early in November, requested authority to raise freight rates 15% generally throughout the country and to make the basic passenger fare 2 cents instead of 2 cents per mile in the eastern territory. Public hearings were begun by the Commission Nov. 19, 1937, to be completed in January 1938; the Commission's decision to be announced a few weeks later. Without committing itself in advance, the Commission has made clear both in its decision of Oct. 19, 1937, and in its annual report for 1937 that it recognizes the need of the carriers for revenues that will enable them to earn a reasonable return upon a fair value of their properties, "if the system of private ownership is to function at all satisfactorily."

In fixing railroad freight rates and the charges of motor carriers over which the Commission was given authority by the Motor Carrier Act of 1935, and in maintaining a fair relationship between rail and motor rates, the Commission needs more definite information than it now has as to the costs of service. While transportation charges cannot be based solely on costs of service, the charges for different services, and the rate schedules of carriers by rail, motor, and water, should be determined with as full knowledge as can be obtained of service costs. The Commission decided in 1937 to strengthen its cost-finding procedure by adding to its administrative organization an accounting division and by allotting thereto a liberal sum from the Commission's funds.

The experience of the Commission in regulating railroad financing shows the need of additional legislation. Through the past activities of railroad subsidiaries the stockholders of several railroad companies, notably the New York, New Haven and



artford, have suffered heavy losses, while the ability of the companies concerned to serve the public has been impaired. The Commission recommends legislation that will enable it to place restrictions upon the expenditure by a carrier, or by its subsidiaries, of funds except for the operation or legitimate improvement of the property of the carrier.

As was expected, the Commission is finding the task of regulating motor carriers under the comprehensive act of 1935 a most difficult one. The regulations and the administrative procedure required for the enforcement of an act applying in many details to more than 80,000 operators, most of whom do a small-scale business, are being worked out and made increasingly effective. The Commission's experience to date leads it "to believe that in a large measure of success will be achieved."

The Commission's jurisdiction over carriers by water and by air is still unduly limited. Bills are pending in Congress, which, if enacted, will give the Commission the same general authority over those carriers as it now has over carriers by rail and road. (See also RAILROADS.) (E. R. J.)

## Intoxication, Alcoholic.

Medical literature published in 1937 dealing with the treatment of alcoholic intoxication concerns itself largely with chronic alcoholism. The trend suggests a wider interest in the subject; a tendency toward improvement in technique; a need for further study of the nature and causes of chronic alcoholism; and a need for more constructive public policies seeking to ameliorate habitual drunkenness.

As in previous years, attention was called to the need for replacing the archaic attitude of the general public toward alcoholism with a more scientific one of natural phenomena being an endless chain of cause and effect, and that the drunkard cannot be understood, satisfactorily treated, or his condition modified through an emotional outlook dominated by vindictiveness and ordinate coercion, condemnation, maudlin sympathy, or condescension.

Treatment of the physical concomitants of chronic alcoholism consists of correcting faulty nutritional situations and the inauguration of a hygienic physical régime. The insulin shock treatment has been tried in the psychoses associated with or proximal to alcoholism. The same general principles apply in the treatment of delirium tremens as heretofore, including abrupt withdrawal of alcohol; safeguarding the patient from self-injury and exhaustion, especially cardiac exhaustion; promotion of elimination; reduction of intracranial pressure by spinal puncture, intravenous dextrose, caffeine, and magnesium sulphate; and promoting adequate nutrition, in some instances employing liver extract. Paraldehyde continues as the drug of choice for sedation, but the problem of sedation in delirium tremens is not satisfactorily solved. Morphine is contra-indicated, since it tends to increase intracranial pressure. The hypodermic administration of amyl ether has been used in the treatment of delirium in pneumonia of the alcoholic.

Physical and chemical treatment so far devised offers no promise. Advocates of the "habit" or "conditioned reflex" as a cause approach the matter by contra-conditioning the patient through substitution of either a conditioned reflex of nausea or disgust for the taste of alcohol, or other substitute conditionings giving greater emotional significance to the individual than alcohol. Apomorphine or other nauseating substances have long been used to create nausea and disgust for alcohol. Other forms of substitution or contra-conditionings involve a transfer of emotional values to activities such as religion, hobbies, different occupations and with an appreciation on the part of the patient, after a period of twelve months, that alcohol is unnecessary.

Advocates of the emotional or psychogenic cause recognize alcoholism as a symptom of some difficulty of the whole person, which in itself constitutes an interaction between the individual and his physical and cultural environment and circumstances. An appreciative understanding of these difficulties on the part of the patient, made possible through modern psychiatric techniques, helps to bring about a more satisfactory reintegration of his personality. This method of treatment has proven of great value in selected cases, but it is difficult and time-consuming and not economically applicable to a large institutional population. Further experiments in the application of this approach in terms of group therapy may offer a more practical technique for its wider employment.

There is insufficient knowledge of the social, cultural, and environmental origin of chronic alcoholism. It is known that some neighbourhoods have an unduly high incidence of drunkenness. Its treatment or amelioration in this respect awaits further knowledge. Public policies for the correction of chronic drunkenness may embrace such factors in community supervision as techniques of court procedure; custodial and treatment facilities, the latter implying all forms of treatment, including disposition; financial assistance and job placement for the individual; and the enactment of legislative control measures wherein the sale of alcohol, with its moralist, profit, and revenue motivation, would no longer obscure its medical, sociological and economic significance.

The publication of Widmark's work in Sweden in 1922, dealing with a method for determining the alcohol concentration in the blood in "acutely drunk" persons, attracted attention as a diagnostic measure for acute intoxication. Its use, however, for determining the degree of intoxication leaves much to be desired in terms of standardization. Further studies are necessary before it can be accepted as a standardized procedure in the forensic field. The odour of alcohol on the breath, disordered articulation, and inco-ordinated gait continue the commonly accepted but unsatisfactory criteria of acute intoxication. The use of caffeine in the form of strong coffee, long considered desirable as a measure to sober "acute intoxication" is found to have little immediate influence on the alcohol content of the blood. It is not a remote possibility to anticipate that some form of medication may be found that will hasten the metabolism, degradation, or chemical destruction of alcohol within the body of an acutely intoxicated person. At present, however, stimulation of respiration, since alcohol is eliminated in part through the lungs, helps to reduce gradually the concentration of alcohol within the blood.

(W. L. T.)

**Inventions:** see PATENTS.

## Investment Trusts.

The first severe test, since 1932, of the ability to maintain their asset values was imposed on investment trusts by the securities market decline in 1937. For most investment trusts in the United States and Canada the shrinkage in the value of their holdings was heavy because of the stock market slump. In the United Kingdom losses were lower. These three countries represent the predominant development and use of this form of financial institution.

About 1,500,000 persons hold investment trust securities in the United States. Since the beginning of the investment trust movement in the U.S. in the early '20s, 1,077 investment trusts have been organized. There are now about 700, of which 495 are of the management type, including the mutual form of organization, and 178 of the fixed or semi-fixed type. About 58 are special or miscellaneous types. The U.S. Securities and Exchange Commission (SEC) concluded in 1937 an investigation as a basis



for a report to be made to Congress in 1938, looking to possible regulatory legislation. The SEC found that up to the close of 1935 the public had invested \$6,500,000,000 in investment trust securities, with a resultant loss of almost \$3,000,000,000, chiefly following the depression of 1929. The management type was popular until after 1929; then the fixed type, in which holdings are restricted to certain classes or types of securities. The severity of the business depression in 1932 resulted in losses to this type of investment company. Since 1933 the management type has been again in favour, and in 1936 the Federal Government granted taxation advantages favouring the mutual form of management company, which distributes at least 90% of its income and does not reinvest profits as do non-mutualized types.

Up to March, 1937, when the securities markets turned downward, most investment trusts showed substantial increases in their asset values. Drastic change, however, came with the sharp market break in August and the subsequent recession. As an example of the decline in investment trust assets which followed, L. Tomlinson, writing in the financial magazine, *Barron's*, stated that 17 mutual companies suffered a decline in asset values ranging from 30.5 to 40% between December 31, 1936, and December 31, 1937. Apparently a large number of investment companies suffered assets declines about the same as the market averages. Some companies sold holdings on market rallies and one important group entered the new year with each having 20 to 45% of assets in cash or short-term government bonds and gold mining stocks. An enormous fund has thus been accumulated both in investment companies and in investment counselor services, of which there are about 400 in the U.S., awaiting re-investment in securities.

**Great Britain.**—There are more than 200 investment trusts in the United Kingdom, divided among English, Scottish and unit types. They control investments valued at slightly more than £350,000,000 and have a total capital issue of £315/320 millions. *The Economist* asserts that the net profits of 205 companies whose reports were issued in 1937 were £8,976,677 to £10,310,389, an advance of 15%. Although 1937 was a relatively good year for earnings the decline in the securities markets resulted in a loss of asset values in portfolios. Thus, three trusts, which issued reports November 30, 1937, showed a depreciation in their investments of 14%, 15½% and 28.4%. (S. O. R.)

**Iodine.** Chile, formerly the producer of almost the entire world supply of iodine (a by-product in the treatment of caliche for the recovery of sodium nitrate), now has active competition in the market from the United States and Japan, and small amounts for local consumption are produced in Italy. The Italian output is of the order of 25–30 metric tons annually; that of the United States was 102 tons in 1936, declining from 182 tons in 1933; no recent figures are available from Japan, but the amounts are presumably still less than in the United States. Chile is still the main source of supply, with an output that ranged from 500 to 1,000 tons before active competition began in other countries; no recent figures are available. Outside competition had broken the monopoly price from about \$4 per pound, to 81¢ late in 1936. (G. A. Ro.)

**Iowa,** north-central State of the United States, popularly known as the "Hawkeye State"; area 56,147 sq.mi.; population (U.S. census, 1930) 2,470,939; (estimate Jan. 1, 1938) 2,588,504. Capital, Des Moines, 142,559, the only city in Iowa with a population over 100,000. Of the State's population in 1930, 979,292 were urban or 39.6%; 2,448,382 whites; 22,557 coloured; 2,282,647 native born whites; 165,735 foreign born whites.

**History.**—The officers elected in November, 1936, who took office in January, 1937 were: governor, Nelson G. Kraschel;

lieutenant governor, John K. Valentine; auditor, C. W. Storms; treasurer, Leo J. Wegman; secretary of State, Robert E. O'Brien; secretary of agriculture, Thomas L. Curran; attorney general,



NELSON G. KRASCHEL, governor of Iowa

John H. Mitchell. A State conservation commission, a board of social welfare, a State commerce commission, a State planning board, and an Iowa unemployment compensation commission were created or reorganized by the General Assembly in 1937. The State highway commission is located at Ames, Iowa; all the other boards and commissions have their headquarters at Des Moines. By the

close of 1937 there were 4,818 mi. of paving on the primary roads of Iowa and 3,460 mi. of graveled or surfaced roads. Highway construction on primary roads cost \$14,469,530.

The General Assembly of Iowa was in session from Jan. 11 to April 27, 1937. Among its important enactments was the complete revision of the motor vehicle code. The State highway patrol was increased from 50 to 103 men. Provision was made for unemployment compensation, child welfare, old age assistance, and the administration of social welfare. The tax laws were amended to provide a limited exemption for homesteads. The law concerning conservation was entirely rewritten.

**Education.**—There were, for the school year 1936–37, 9,000 rural schools in Iowa, 1,442 graded schools, and 928 approved high schools. The total number of children of school age (5–21 years) was 706,340. Of these 528,764 were enrolled in the public schools and 1,974 in public junior colleges. The teachers in the public schools, exclusive of junior colleges, numbered 27,097; and the cost of the public schools for the year was \$44,786,991. The total attendance at the three State-supported institutions of higher education (the State university at Iowa City, the State College of Agriculture and Mechanic Arts at Ames, and the State Teachers college at Cedar Falls) was 19,431. There are also some twenty privately supported colleges in the State. Iowa ranks first among the States in literacy with only .8 of 1% of the people illiterate.

**Charities.**—A State department of social welfare was established in 1937, headed by a State board of social welfare, composed of five members appointed by the governor. This board is to administer old age assistance, aid to the blind, aid to dependent children, child welfare, and emergency relief. Working with it are the local boards in the 99 counties. The per capita tax for old age assistance was dropped and funds for this purpose are taken from the general taxes. An unemployment compensation commission was also established to supervise the administration of unemployment insurance and compensation.

The board of Control (Harry C. White, Chairman) has charge of the State's penal, correctional, and eleemosynary institutions. Statistics for these as of Dec. 1937, are as follows: Men's Reformatory, Anamosa, 1,104; State Penitentiary, Fort Madison, 1,476; Women's Reformatory, Rockwell City, 82; Training School for Boys, Eldora, 613; Training School for Girls, Mitchellville, 192; and State Juvenile Home, Toledo, 299.

**Banking and Finance.**—There were 114 national banks, 304 savings banks, 237 State banks, and 4 trust companies doing business in Iowa in 1937. On June 30, 1937, the State institutions had total deposits of \$383,193,883, an increase of \$3,480,836 over



those of the previous year, and the deposits in the national banks totalled \$584,339,000. Of the total bank deposits, \$616,068,000 were covered by government insurance. Farm prices increased 8.1% over those of 1936, banks debits were 2.2% larger, business building contracts were 16.4% larger, and residence building increased 14.8%. Public building, however, decreased 6.1%. Sales tax returns were 6.5% larger in 1937 than in 1936, indicating that Iowans spent \$780,000,000 for retail merchandise, \$47,500,000 more than in 1936. Life insurance sales in 1937 exceeded those of 1936 by 10%.

**Agriculture.**—There were 212,376 farms in Iowa in 1937 with 4,323,578 ac. of land. Slightly more than 58% of this land was farmed by tenants. Crops in Iowa were unusually good in 1937. The following figures indicate the production and value of the principal crops in 1937:

	Acres	Total Production	Total Value
Corn . . . . .	11,189,000	503,505,000 bu.	\$211,472,000
Oats . . . . .	5,755,000	258,975,000 bu.	62,154,000
Hay . . . . .	3,033,000	4,372,000 tons	34,102,000
Wheat . . . . .	866,000	15,976,000 bu.	12,940,000
Barley . . . . .	370,000	11,840,000 bu.	5,683,000
Potatoes . . . . .	60,000	5,040,000 bu.	3,125,000
Soybeans (for beans) . . . . .	229,000	4,236,000 bu.	3,388,000
Soybeans (for hay) . . . . .	510,000	714,000 tons	.....

The corn crop in 1937 was almost three times as large as the 173,523,578 bu. raised in 1936. The valuation of the crop in 1936, however, was \$178,193,173. On Jan. 1, 1937, there were 4,870,175 pigs on Iowa farms, 1,018,159 sheep, 3,847,354 cattle, 789,732 horses, and 51,520 mules. During 1937 Iowa farmers marketed \$500,000 hogs, 1,565,000 cattle, 356,000 calves, and 1,280,000 sheep.

The total cash income of Iowa farmers in 1937 was \$522,356,000 as against \$569,000,000 in 1936, and \$528,495,000 in 1935. Of the 1937 total, approximately \$418,000,000 came from live stock, \$79,000,000 from crops, and \$25,000,000 from government payments for soil conservation. On Jan. 1, 1937, 193,241 automobiles and 18,766 auto trucks were owned on Iowa farms. Farm-owned radios numbered 128,073, approximately 60.3% of the farms being so equipped, and 83,656 tractors were in use.

Iowa ranks first among the States of the Union in the production and value of corn (including popcorn), hogs, oats, horses, poultry, and eggs. It ranks first also in the valuation of farm lands and buildings and farm implements and in the number of farm-owned telephones and automobiles. (B. F. S.)

**Iowa, State University of.** The State University of Iowa in 1937 observed its twentieth year by taking some of its longest forward strides.

Established by act of Iowa's first general assembly Feb. 25, 1847, it was the first State university to admit women on equal standing with men. It is located in Iowa City, a community of 6,000 persons 55 mi. west of the Mississippi river.

Enrolment for the year ending in June 1937 totalled 10,756, breaking the old record made during the previous 12 months. Award of degrees totalled 1,524, of which 872 were advanced degrees.

The major building expansion was the completion of a \$65,000 anatomy laboratory and the construction of an \$8,000 pharmaceutical laboratory. A dormitory, to cost \$325,000 and to accommodate 200 men, was started.

A faculty of 525 persons gave instruction in the nine colleges and five schools. Changes in staff personnel occurred in greater numbers than usual.

Grants for scientific research amounted to about \$35,000, of

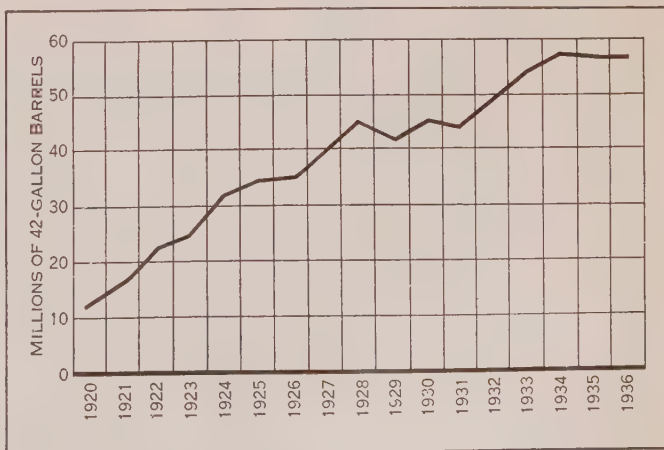
which about \$22,000 was for work in medical fields.

Some of the important research projects concerned the physiology of sex and of the normal cell, work on blood clotting, studies of plumbing systems to remedy water pollution, and research into the intelligence of children.

**Iran,** known before March 1935 as Persia, a country of western Asia bounded to the east by India and Afghanistan, to the north by the U.S.S.R., to the west by Iraq and Turkey, and to the south-west and south by the Persian gulf and Arabian sea; ruled since 1926 as a constitutional kingdom by Reza Shah Pahlevi (b. 1878). Area, about 628,000 square miles. Estimated population, c. 15,000,000, some 2 to 3 millions being nomadic. The majority are Shiah Mohammedans, but there are some 50,000 Armenians and a smaller number of Nestorian Christians, about 45,000 Jews, and a number of Bahaists and adherents of other faiths. Education, formerly almost entirely in the hands of the religious organizations, is being rapidly developed; the number of schools is said to have increased sixfold in ten years. The largest city is Teheran, the capital, with over 360,000 inhabitants; it is followed by Tabriz (220,000), Meshed (140,000), Shiraz (120,000), and Isfahan (100,000). There were no constitutional developments or important events in 1937, but the country's general progress and modernization was continued. In July, a mutual non-aggression pact was signed at Saadabad with Iraq, Turkey, and Afghanistan, an agreement having been signed with Iraq a few days previously settling the long-standing frontier dispute as to the navigation of the Shatt-el-Arab.

Agriculture is not of great importance, in view of the desert nature of much of the country; there are mineral resources of value, not yet extensively worked, save for the oil-fields in the south. Manufactures, save for carpets, are few, though there is some development of the textile industry, especially cotton. Railways and roads are being rapidly constructed: there are about 600 mi. of the former.

The unit of currency is the rial, of 100 dinars: the gold standard is suspended, and the silver rial—nominal value 2.4d—exchanges at 80 to the pound sterling. The 1937-38 revenue is estimated at £15,625,000 and £15,600,000 respectively. Revenue arises mainly from customs duties, oil royalties, State monopolies, and land taxes. Foreign trade is (since 1931) a State monopoly: exports in 1936 were valued at c. £24 millions, imports at c. £13 millions. Besides several other banks, there is a national bank, the Banque Mellié Iran, with the sole right of note issue, which was formerly held by the British-owned Imperial bank of Iran. The standing army, about 100,000, is well equipped, and a small fleet operates on the Persian gulf.



CRUDE PETROLEUM PRODUCED in Iran



**Iraq**, an Arab State of the Near East, between Persia, Syria, and Arabia, watered by the Tigris and Euphrates; an independent kingdom since 1932, when the British mandate was terminated. Ruler, Ghazi I (b. 1912; succeeded 1933). Area, c. 116,500 square miles. Population (estimate, 1932) 2,856,000. Baghdad, the capital, has about 261,000 inhabitants; other large towns are Mosul (c. 100,000) and Basra (c. 53,000). The people are almost entirely Mohammedans, the Shiah somewhat outnumbering the Sunnis; disputes between the two sects are frequent. There are over 100,000 Christians, and about 75,000 Jews. Arabic is the official and general language.

**History.**—In Jan. 1937, Seyyid Hikmet Sulaiman, premier since the coup d'état of Oct. 1936, began a campaign for army reorganization, extending the Conscription Law to the Yezidis. Towards the end of February rumours arose that a revolutionary movement against the Government of Baqir Sidqi and Hikmet Sulaiman was afoot, and arrests were made among the Baghdad garrison. The cabinet was reorganized in June, four ministers resigning on the ground of disapproval of army methods; and on Aug. 12 General Baqir Sidqi, Chief of Staff, together with the head of the air force, was assassinated at Mosul aerodrome by an Iraqi soldier. On the 16th the premier resigned, and a new moderate cabinet was formed by Seyyid Gamil al Madfai, who had been premier three times previously, the new premier taking also the Defence portfolio. The Iraqi Government was party to the non-aggression treaty of Saadabad (*see* ISLAM). A public works loan for £1,000,000 was issued in London in July. After the publication of the plan for the partition of Palestine, the Government protested against that policy in a note to the League of Nations dated July 30, upholding the idea of an independent, undivided, and Arab Palestine.

**Agriculture.**—Agriculture is extensively carried on, wheat, barley, rice, and dates being the principal crops; oil is the chief mineral product, and wool is produced for export. Manufactures are not much developed. There are some 900 mi. of railway, and roads are being opened up over most of the country, about 5,000 mi. having been constructed since 1918. The excellent airport at Baghdad is served by Imperial Airways, K.L.M., and other lines.

**Banking and Finance.**—The standard of currency is the dinar, equivalent to the pound sterling. Revenue and expenditure in 1936–37 amounted to £5,985,000 and £6,140,000 respectively; imports were valued at about £7,200,000 and exports at £3,484,000. An Agricultural and Industrial bank under Government auspices exists; the Ottoman bank and other eastern banks also operate. The British air force has stations in the country; the Iraqi air force and army combined have a strength of 20,500, and compulsory service is in force. The country is policed by about 9,000 officers and men.

**Education.**—There is as yet no university; over 600 primary schools have some 90,000 pupils, and there are 28 intermediate and 12 secondary, technical, and special schools.

**Ireland, Northern.** Northern Ireland comprises the six Ulster counties of Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone, forms part of the United Kingdom of Great Britain, but (since 1920) has its own parliament and executive, though also represented in the Imperial Parliament by 13 members. Capital, Belfast. Ruler and national flag, as for Great Britain.

**Area and Population.**—Area: 5,237 sq. mi. Population (1937): 1,279,177 (density 246 per sq. mi.). The largest cities are Belfast (pop. 437,824) and Londonderry (pop. 47,857).

**History.**—There were no constitutional changes or by-elections. Changes in the ministry were caused by the death in April of the

Rt. Hon. J. W. Pollock, minister of finance; he was succeeded by the Rt. Hon. J. M. Andrews, minister of labour, whose place was filled by Major D. Graham Shillington, Unionist member for Armagh Central. In December Mr. J. H. Robb replaced Viscount Charlemont as minister of education, and Mrs. Debra Parker, member for South Londonderry, became parliamentary secretary to the ministry of education and the first woman to hold Government office in Northern Ireland. A law reform act was passed assimilating the status of married women to that recently attained in Great Britain, making better provision for compensating victims of accidents, etc. A census was taken on Feb. 28. In July King George VI visited Belfast, his welcome being marred by outrages on the Free State frontier, including the burning of customs posts. In September work was commenced at Belfast on a new airport on a site of 365 acres reclaimed by the harbour commissioners.

**Trade and Communications.**—The principal industry is agriculture; there are over 900,000 acres under crops, in about 95,000 holdings. Shipbuilding (1936 output, 62,525 tons) and the linen industry follow, both centred in Belfast. The total volume of external trade in 1935 was £92,000,000. There are some 750 miles of railway and 13,000 of roads. A road transport board (formed 1935) has assumed the management of goods and passenger transport.

**Finance and Banking.**—There is no special local currency; the monetary system is that of Great Britain. For the financial year ended March 1937 the total budgetary revenue was £11,596,818; the corresponding expenditure £11,541,868, showing a surplus of £54,000. The budget estimates for 1937–38 balance at £14,684,000, allowing for contributions to Imperial funds. Taxation is mainly collected by the Imperial Government, which, after making certain deductions, hands over the balance to the local exchequer. The banking system resembles that of Great Britain; on Dec. 31, 1936, the three principal local banks held deposits of £49,857,000.

**Education.**—Education is conducted under the Northern Ireland ministry of education in a manner similar to that obtaining in the rest of Great Britain. Latest statistics report 1,753 elementary schools (200,607 pupils), 73 grant-aided secondary schools (13,165 pupils), 124 centres for technical instruction (23,218 students), and the Queen's University of Belfast, with 144 professors, lecturers, etc., and nearly 1,600 students.

**Religion.**—There is no established church. About 33.75% of the population is Roman Catholic; 31.4% Presbyterian, and 27% Protestant Episcopalians.

**Defence.**—Northern Ireland has no separate defence forces. It is policed by the Royal Ulster constabulary (maximum strength 3,000), and a part-time special constabulary. (*See also* GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF.)

**Irish Free State.** Under the constitution, operative since Dec. 29, 1937, the name "Irish Free State," given by the Treaty of 1921 to the 26 counties of Southern Ireland, is to be replaced by that of "Eire," or Ireland. The territory remains unchanged. Capital, Dublin. Ruler, a president (*uachtarán*), to be elected by universal suffrage and to hold office for seven years. National flag, the tricolour of green, white, and orange.

**Area and Population.**—Area: 26,592 square miles. Population (1936): 2,965,854, a decline of 4.8% since 1926. On the other hand, the population of towns with over 10,000 inhabitants has increased by 9.3%. The estimated emigration for 1937, mainly to Great Britain, is about 40,000. Roman Catholics numbered (1926) 2,751,000; Protestant Episcopalians 164,000; Presbyterians 32,000; Methodists 11,000; Jews 4,000; total non-Catholics 221,000.



1926, the total of native Irish speakers was 544,000, a decline of 10,000 since 1911. Irish (Gaelic) is compulsory in all schools and is increasingly used as a medium of instruction. The leading cities are Dublin, pop. 472,000; Cork, 80,713; Limerick, 41,385; and Laoghaire (Kingstown), 39,762; Waterford, 27,962; Galway, 28,285. By the Local Government (Galway) Act, 1937, Galway came once more a municipality, with mayor and corporation.

**History.**—The titles "executive council" and "minister" are now abolished, and those of "president" and "vice-president" replaced by *taoiseach* and *tánaiste*. Taoiseach and minister for External Affairs: E. de Valera; *tánaiste* and minister for Local Government: S. T. O'Kelly; members of Government: P. J. Keating (justice), S. MacEntee (finance), F. Aiken (defence), E. Ryan (agriculture), S. Lemass (industry and commerce), T. W. Merrig (education), G. Boland (lands), O. Traynor (posts and telegraphs).

The constitution of Eire was approved by plebiscite, July 1, 1937. Voting: for, 685,105; against, 526,945. In many respects it re-enacts the Free State Constitution of 1922, the principal changes being: the institution of a president as head of the State, and the restoration of a senate of 60 members, 11 nominated by the *taoiseach*, 6 elected by university graduates, and 43 from electoral panels by a joint electorate made up of the Dáil and an elected number of county councillors. There is to be a Council of State with advisory functions. No mention is made of the Treaty of 1921 nor of the King. Article 29 empowers the Government to use for certain external purposes the organs of those states with which Eire is for the time being associated.

The general election, held also on July 1, 1937, gave 69 seats to Fianna Fáil, 48 to Fine Gael, 13 to Labour, and eight to Independents. This left Fianna Fáil in a minority of one, but they retain the support of Labour on most questions. The most important legislation of 1937 was the new constitution. An act to provide widows' and orphans' pensions was passed. It was announced that ministers were now accepting the salaries fixed by the previous Government, and the whole question of their emoluments was submitted to a committee. Following the abdication of King Edward VIII, the Executive Authority (External Relations) Act, 1936, now embodied in article 29 of the constitution, was passed. The Free State was not represented at the Imperial Conference, 1937. In Jan. 1938, Irish and British representatives met in London to examine all outstanding differences.

**Trade and Communications.**—Agricultural exports to Great Britain, 1937, were £17,430,017. The area under tillage was 999,100 acres. Cattle numbered 3,963,900; sheep, 2,988,300; pigs, 956,000; all showing considerable decreases from 1936. In 1937 a minimum wage (24s. a week) was fixed for agricultural labourers, and control boards were set up for cereal crops and livestock. The year 1937 saw record progress in Irish manufactures. Apart from many new factories, there were established industrial alcohol plants, an oil refining company, and cement works. The value of Ireland's industrial output has increased by 60% since 1932.

Imports (Dec. 1936–Dec. 1937), £44,126,363. Exports, £22,241,292. Increase in adverse balance, £3,870,558. The most important event of 1937 was the series of transatlantic flights from Foynes to Newfoundland. An Irish company has been formed to co-operate with Imperial and Pan-American Airways. Broadcasting is controlled by the Department of Post and Telegraphs. Early in 1937 the number of licences passed was 1,000. A short-wave station is being built at Athlone.

**Finance and Banking.**—Estimated revenue for 1937–38: £18,841,000. This includes £3,760,000 to be borrowed. There has been an increase in expenditure since 1931–32 of £7,500,000. Tax

revenue, 1936–37: £25,287,000. Income tax, £4,738,000. Customs, £10,016,000. Land annuities withheld from Great Britain accounted for £1,325,000.

Banking is regulated by the Currency Act, 1927, under which currency is "pegged" to sterling. Six banks issued fiduciary notes for £5,028,764 from Sept. 1936 to Sept. 1937. Currency notes reached the record figure of £8,953,657.

**Education.**—Primary education is compulsory to the age of 14. Schools are under episcopal management, but the State controls programs and pays teachers. Secondary education is voluntary, mainly given by diocesan schools and religious orders, with State-conducted examinations. Since the Vocational Education Act (1930), great progress has been made in technical education. The universities are: Trinity college (University of Dublin), and the National University of Ireland, with three constituent colleges at Dublin, Cork, and Galway, and a recognised college for clergy at Maynooth.

**Defence.**—Regular army: 5,751. Reserve: 5,563. Volunteer force: 9,810. There is no navy, and a very small air force. The police (*gárda síochána*) number 7,646.

**BIBLIOGRAPHY.**—E. Curtis, *History of Ireland* (1936); *Irish Free State Official Handbook* (1932); Dublin Stationery Office Publications. (M. T.)

**Iron and Steel.** Discussion of the iron and steel industry can for the most part be handled more satisfactorily subdivided into its three main headings—iron ore, pig iron, and steel. The production tables found below under each of these headings include all countries in which production of the commodity in question has exceeded 1,000,000 tons. This coverage in general accounts for 93–98% of the totals. In all three the greater extent to which the depression has affected the United States industry, in comparison with that of the rest of the world is clearly evident, in the much smaller output in the low year, and the lesser extent to which recovery had attained in 1936; while declines ranged from 76% to 87% in the United States, and recoveries reached 67–85%, the corresponding declines for the rest of the world were 41–49%, with recoveries to 96–123% of 1929. Iron ore suffered the worst and recovered the

STEEL MILLS of the United States Steel Corporation at Gary, Indiana





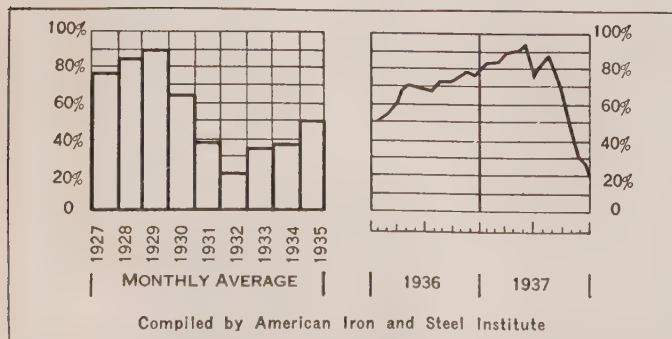
least, while steel declined the least and recovered the most, with pig iron intermediate between these two; this was true of both the United States and the ex-U.S.A. figures.

A point of considerable technical interest is the ratio of production between pig iron and steel. In 1900 this was 100:73, gradually changing on the one side with the decline of uses for pig iron other than steel manufacture (particularly the decline in the use of iron castings), and on the other side with the growth of the practice of utilizing more and more scrap in the production of steel, thus increasing the output of steel without affecting that of pig iron. The two reached a balance about 1915, and stood at 100:122 in 1929 and 100:135 in 1936; in 1937 the ratio dropped to 100:130, probably because of shortage of scrap to maintain the former rate of increase.

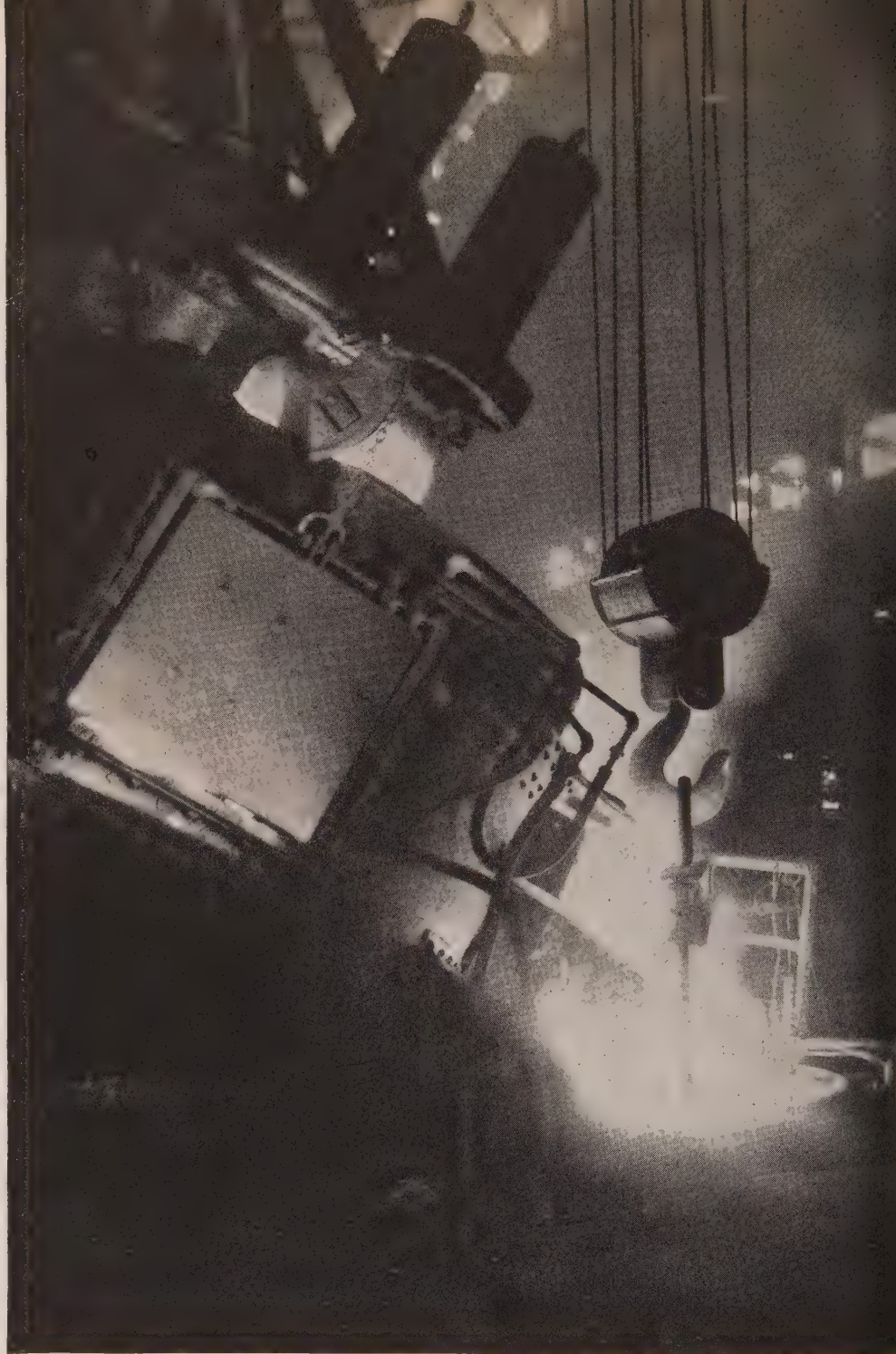
Incidentally, attention might be called to the fact that the preliminary estimates for the outputs of pig iron and steel for 1937, given in the tables, are American estimates; European estimates are somewhat higher for both, but it is still too early to determine which is the more nearly correct.

**Iron Ore.**—World production of iron ore decreased 64% from the 1929 high to the 1932 low, and recovered to 85% of the 1929 level in 1936. Three countries, the United States, France and the Soviet Union, contribute nearly two-thirds of the total, while the other two of the leading iron and steel producers, the United Kingdom and Germany, add another 10%.

By the end of 1936 the United States had recovered to only 67%



STEEL INGOT PRODUCTION in the United States: percentage of capacity.



ELECTRIC FURNACE being tilted to pour ten tons of molten steel into ladle, which distributes the metal to ingot moulds

of the 1929 high, but preliminary reports for 1937 promise closing of the gap when the final figures for the year become available. French production is still well below the former high but the United Kingdom and Germany have shown better recovery, and there are in the Soviet Union heavy increases.

Exports of iron ore from the United States are small, being the order of 1% of production; imports are somewhat larger and average about 5% of production, about one-half of which comes from Chile, and one-fifth from Cuba. The Russian industry is even more nearly self-contained than that of the United States. Germany produces only about one-quarter of her requirements, and imports three-quarters, while the United Kingdom produces about two-thirds and imports one-third. Sweden exports almost her entire output, mainly to Germany, and about one-ha-



World Production of Iron Ore  
(In millions of long tons)

	1929	1932	1934	1935	1936
North America—					
Newfoundland . . . . .	1.5	0.1	0.6	0.6	0.9
United States . . . . .	73.0	9.8	24.6	30.5	48.8
South America—					
Chile . . . . .	1.8	0.2	0.9	0.8	1.3
Europe—					
Austria . . . . .	1.9	0.3	0.5	0.8	1.0
Czechoslovakia . . . . .	1.8	0.6	0.5	0.7	1.1
France . . . . .	49.9	27.2	31.5	31.6	32.7
Germany . . . . .	6.3	1.3	4.3	5.2	?
Luxemburg . . . . .	7.5	3.2	3.8	4.1	4.8
Spain . . . . .	6.4	1.7	2.1	2.6	?
Sweden . . . . .	11.3	3.2	5.2	7.8	11.0
U.S.S.R. . . . .	6.9	12.0	21.4	26.6	27.5
United Kingdom . . . . .	13.2	7.3	10.6	10.9	?
Asia—					
China . . . . .	2.6	2.2	2.5	?	?
India . . . . .	2.4	1.8	1.9	2.4	2.6
Malaya . . . . .	0.8	0.7	1.1	1.4	1.7
Africa—					
Algeria . . . . .	2.2	0.5	1.3	1.6	1.9
Morocco (French) . . . . .	1.2	0.2	0.8	1.1	1.1
Australia . . . . .	0.9	0.6	1.2	1.9	?
World Total . . . . .	200.0	75.0	118.7	138.7	170.0
Ex. U.S.A. . . . .	127.0	65.2	94.1	108.2	121.4

the French output is exported to Belgium and Germany. **Pig Iron.**—World production of pig iron dropped 60% between 1929 and 1932, recovering to slightly better than the 1929 level in 1937. Three of the five leading nations, the United States, Germany and the Soviet Union, account for two-thirds of total output, and the United Kingdom and France for another 15%. Of these only the Soviet Union has shown a marked increase over 1929; Germany stands at about par, while the others are all low. The apparent increase in Germany and much of the decrease in France is explained by the transfer in 1935 of the Saar from the jurisdiction of France to that of Germany. Exports of pig iron from the United States are almost non-existent, and imports are negligibly small. Russian imports are apparently small, and exports take about 5% of the output. In Germany and France imports average about 1% and exports about 2% of production, while the United Kingdom imports are about 2% and exports 2%. In all cases the amounts are so small as to be of little practical importance. In some cases, however, considerable amounts of scrap metal are imported, to take the place of pig iron in the production of steel.

**Steel.**—A decline of 58% in the world steel production between 1929 and 1932 was canceled in 1936, when an output of 122,600,000 long tons set a new high record, which in turn was replaced by another record output of 132,500,000 tons in 1937, an increase of 8% over 1936, and of 11% over 1929. Of the five

World Production of Pig Iron  
(In millions of long tons)

	1929	1932	1935	1936	1937
North America—					
Canada . . . . .	1.2	0.2	0.7	0.7	1.0
United States . . . . .	42.6	8.8	21.4	31.0	37.3
Europe—					
Belgium . . . . .	4.0	2.7	3.0	3.2	3.7
Czechoslovakia . . . . .	1.6	0.4	0.8	1.1	1.6
France . . . . .	12.3	6.8	6.0	6.1	7.8
Germany . . . . .	13.2	3.9	12.3	15.1	15.7
Luxemburg . . . . .	2.9	1.9	1.8	2.0	2.5
U.S.S.R. . . . .	4.0	6.3	12.3	14.1	14.4
United Kingdom . . . . .	7.6	3.6	6.4	7.7	8.5
Asia—					
India . . . . .	1.4	0.9	1.5	1.5	1.8
Japan . . . . .	1.5	1.5	2.7	2.2	3.2
World Total . . . . .	97.2	39.2	73.5	91.0	101.8
Ex. U.S.A. . . . .	54.6	30.4	52.1	60.0	64.5

leading producers, the United States and France have not yet regained the 1929 level, while the Soviet Union, the United Kingdom and Germany have surpassed it. It may be noted, however, that as with pig iron, much of the apparent German increase and of the French decrease are due to the transfer of the Saar in 1935 from France to Germany. Of the smaller producers listed in the table, every one has surpassed the 1929 level of production, or has approached it very closely.

The United States steel industry is practically independent of imports, and exports amount to only about 7% of the production. Among the European producers international trade plays a much larger part in the industry, except for the Soviet Union, in which exports are small, and imports run about 4%. The United Kingdom has steel imports of about 12% and exports of 19% of production, leaving a net export of 7%. Germany imports 3% and exports 19%, or a net export of 16%. France imports 2% and exports 33%, making a net export of 31%. The Economic Union of Belgium and Luxemburg are still heavier exporters, sending out 44% of the combined output. Incidentally, these European percentages, though still fairly large, have been decreased by about one-half during the past decade by export and import restrictions and embargos that have been put into effect

World Production of Steel  
(In millions of long tons)

	1929	1932	1935	1936	1937
North America—					
Canada . . . . .	1.4	0.3	0.9	1.1	1.4
United States . . . . .	56.4	13.7	34.1	47.8	50.7
Europe—					
Belgium . . . . .	4.0	2.7	3.0	3.1	3.9
Czechoslovakia . . . . .	2.2	0.7	1.2	1.5	2.2
France . . . . .	11.7	6.9	6.2	6.6	7.7
Germany . . . . .	16.0	5.7	15.8	18.9	19.4
Italy . . . . .	2.1	1.4	2.2	2.3	2.1
Luxemburg . . . . .	2.7	1.9	1.9	2.0	2.4
Poland . . . . .	1.4	0.5	0.9	1.1	1.4
Sweden . . . . .	0.7	0.5	0.9	1.0	1.1
U.S.S.R. . . . .	4.6	5.7	12.3	16.1	17.1
United Kingdom . . . . .	9.6	5.3	9.9	11.7	12.9
Asia—					
Japan . . . . .	2.3	2.4	4.3	4.9	5.7
World Total . . . . .	118.1	49.9	97.5	122.6	132.5
Ex. U.S.A. . . . .	61.7	36.2	63.4	74.8	81.8

in these and other countries to which exports were formerly made. (See also FLUORSPAR; METALLURGY.) (G. A. Ro.)

**Iron and Steel Institute, American:** see AMERICAN IRON AND STEEL INSTITUTE.

**Iron Lung.** For some time there have been available artificial respirators or so-called iron lungs which incase the entire body and which cause the human being whose muscles and nerves of respiration have been paralyzed to breathe by variations in the pressure of the atmosphere around the body. Previous devices have been known as the Drinker and the Emerson respirator. The new type of respirator incases only part of the body, and was brought to public attention during 1937. The Sahlin respirator is recommended for protracted mechanical ventilation of the lungs in treating respiratory paralysis. Dr. B. Sahlin, working at the Physiologic Institute in Lund, Sweden, constructed this respirator.

Respirators imitate natural respiration by rhythmic alterations of the thoracic volume, producing artificial respiration. In other apparatus on the market, the entire body of the patient, except for head and neck, is placed inside a close compartment. The Sahlin device encloses only the thorax and abdomen, leaving head, neck, arms and perineal region easy of access for general





ALUMINIUM AND RUBBER RESPIRATOR for manipulating the lungs of paralyzed persons and to replace the barrel-like "iron lung" which imprisoned the entire person

or special nursing care. This, as well as other types, operates by first creating a slight negative pressure inside the closed compartment, thus increasing the thoracic volume. Then the outside air rushes into the patient's lungs which is now a low pressure area. As the pressure inside the respirator returns to normal, the chest wall retracts, accompanied by expiration.

The Sahlin respirator consists of a hood with framework of inflexible sheet-metal (available in three sizes to fit different sized individuals) mounted on an operating table movable in all directions. Special locking arrangements enable the hood to be fitted to the patient and removed quickly. The hood is fitted closely to the surface of the body by rubber material. A large tube (like a vacuum cleaner hose in appearance) connects the hood to the electric machine supplying the mechanical alterations of pressure both positive and negative. The respiratory rate and variations of pressure are said to be readily adjustable.

There are two objections to this device. In the first place, once the patient is placed under the hood, he is held immovably to the table. The table itself may be adjusted to a limited extent in order to shift the patient's weight. In spite of this, pressure sores are apt to occur where the apparatus is used for extended periods. In addition, and this objection also holds true for the other type of respirator, the parts that touch the patient's skin rub against it at each respiratory movement. (See also *MEDICINE: New Materials and Apparatus*.)

(M. FL.)

**Irrigation.** Throughout the western United States where irrigation is extensively practiced the precipitation of 1937 was generally more abundant than that of the preceding six years. This was sufficient not only to supply current irrigation requirements but also to replenish in part depleted reservoir storage. The water shortages experienced during the dry years stimulated the investigation of the possibilities of the more effective conservation and utilization of the water resources of the arid region. Acute water shortage conditions along the Rio Grande in New Mexico and West Texas called for a detailed and comprehensive investigation of the upper basin of that stream during 1936 and 1937 under the auspices of the National Resources committee and the States of Colorado, New Mexico and Texas. Similarly, water shortages in eastern Colorado led to an exploration of the possibilities of the transmountain diversion of water from the upper tributaries of the Colorado on the western slope of the Rocky Mountains to supplement the limited supplies in the upper tributaries of the South Platte and the Rio Grande.

Among the trends that were notable during 1937 the following may be mentioned: (1) a substantial extension of the work of making seasonal surveys of snow conditions in the mountain areas

drained by irrigation streams as a basis of forecasting prospective stream flow; (2) progress in diverting and spreading the flood waters of mountain streams to replenish the ground waters of alluvial valleys, which waters are extensively used for irrigation by means of deep wells; (3) the extensive migration of families to irrigated lands from dry farmed areas in which drought conditions were severe during 1934 and 1936; (4) the progressive development of additional land in established irrigated districts through the more efficient use of available water supplies and the re-use of waters hitherto wasted as drainage from irrigated lands; and (5) in connection with this last there was increasing attention given to the quality of irrigation and drainage waters in relation to the effects of their dissolved salts on the productivity of irrigated lands.

While no new large irrigation project was completed or opened to settlement during 1937, progress was made on large irrigation works such as the Imperial dam with canals to the Imperial valley in California and the proposed Yuma-Gila project in Arizona; the Central valley project in California; the Grand Coulee dam on the Columbia river in Washington; and the Kendrick (Casper-Alcova) project in Wyoming. Because of adverse economic conditions, there was little construction on non-Federal projects during the year; but some work was done in recon-  
ditioning existing distribution systems and in extending and improving drainage facilities on such projects. It is estimated that the aggregate area of irrigated land in the western United States is somewhat in excess of eighteen million acres. This acreage has not changed materially for several years, because such additions as have been made by new construction or extensions have been offset by losses due to water shortages or to increasing salinity in older areas.

(C. S. S.)

**Great Britain.**—In so far as "irrigation" includes its obverse land drainage and flood protection, great advances are made in that direction every year as a result of the Land Drainage Act of 1930. The Fenland floods are being brought under control by improvements in individual rivers tending to strengthen their defences against floods and tides. Such schemes are often combined with improvements to navigation, as is exemplified by the works now in progress on the river Lea and the recently completed "Dog-in-a-Doublet" lock on the river Nene, near Peterborough. On the river Severn, 5½ mi. of the channel are being widened, while, to facilitate the discharge of flood waters, many old weirs and sluices are being remodelled or replaced.

**Australia.**—The effects of denudation on the upper reaches of the Murray river have materially altered its régime, its discharge during the six winter months being now three times as much as during the summer months, whereas formerly it used to be practically uniform throughout the year. Consequently, in summer the small lakes, Alexandrina and Albert, at the river's mouth, become salt, thus damaging the irrigation, the grazing, and the potable water supplies round their shores. Five simple barrages are therefore being built to exclude the salt water, at an estimated cost of £545,000.

The water conservation and irrigation commission of New South Wales is establishing various irrigation schemes, having at its disposal the 300,000 ac.-ft. of water stored by the Wyangala dam on the Lachlan river, that was completed in 1935.

**India.**—Over 50 million acres are irrigated under various systems, and hence research is actively carried on. The following methods of lining canals to prevent seepage losses have been found unsatisfactory, as the cost is heavy in relation to life: clay puddling, cement slurry, cement mortar, concrete slabs, oiled paper, and bituminous material. A chemical method under trial, which promises well, adds sodium carbonate to soils containing available calcium, thus turning the permeable calcium clays into



impermeable sodium clays, which easily become puddled.

Work has begun on the Haveli irrigation project, which is to provide perennial irrigation for 700,000ac. and non-perennial for 60,000ac. at a cost of £3,750,000 of which about 40% is taken by a barrage on the Chenab river, below its junction with the Jhelum river. The Thal project, depending on the Indus river, in the Mianwalli district of the Punjab, is approved at a cost of £3 millions.

**New Zealand** is developing irrigation in the South Island by making a canal 34 miles long, taking from the Rangitata river to water land in Ashburton county. The project is estimated to cost £135,000, and will take three years to complete.

**South Africa.**—The Vaal-Hartz rivers project stores Vaal river water some 20 miles south of Johannesburg, which then flows for 360 miles along the Vaal river to be diverted by a barrage into a four-mile long cutting which goes through the watershed of the Hartz river into a canal system in the latter's valley, serving about 100,000 acres. The total cost, estimated at £4 millions, includes £900,000 for the dam, which forms a reservoir holding 100,000ac.-ft., that could be more than doubled at comparatively small additional cost. The dam across the main channel of the Vaal river is concrete (length 1,700ft. and greatest height 160ft.), while an earth-bank closes a side branch. The latter has no impermeable core-wall, the head being small, and reliance therefore placed on the length of travel of the water to stop creep.

**Algeria.**—Rock-fill dams have been successfully used, being made watertight either by facing them with an impermeable apron or by including an impermeable core-wall of reinforced concrete. Two such dams have been built in the Province of Oran, one at Sakkhada, 148ft. high, costing 121 million francs (about £800,000), the other at Bou-hanifia, 180ft. high, costing 325 million francs (about £2,200,000).

**China.**—The chief projects lately completed include the Karatsi project in the Suiyuan province, some 450 miles north of Peking, which takes water from the Yellow river to supplement the ordinary rainfall, and three projects completed by the Shensi provincial government on the Wei, King, and Lo rivers, all in the Yellow river system, protecting about 300,000ac. in all. One of these, the Wei Pei project, revives irrigation in a district where the first works of this nature date back to 240 B.C.

**Egypt** has built a reservoir on the White Nile in the Sudan, to be filled with the silt-free water of that river while the main Nile is in flood and Egypt has water to spare. The requisite dam, at Gebel Aulia, about 25 miles south of Khartoum, cost about £2 millions (£E.1 = £1 os. 6d.), not including land compensation (£E.750,000) and some other charges. It is 3 miles 1 furlong long, with maximum height 60ft.; it has 60 sluices, 10 being "blind" for the present, and a lock 60ft. wide. The work is built on a wide base, so that it can easily be heightened by about 9ft. The reservoir is about 200mi. long when full, with an average width of about 2½mi.; it stores about 3,100 million cubic metres of water but, owing to evaporation from the reservoir and seepage losses in transmission down the Nile, only about 2,200 millions reach Egypt, where they will suffice to extend perennial cultivation to about 550,000 feddans (1 feddan = 1¼ acres).

The remodelling of the Assiut barrage, which serves middle Egypt, to hold a head of 14ft. instead of its present 10ft. 8in. was begun in 1934, and will shortly be finished, at a total cost of about £2.1 million.

The Delta barrages, serving lower Egypt, are nearly 100 years old, and are being replaced (the old structures being retained as ad bridges) by two new barrages, to be called the Mohamed Ali barrages, sited a little downstream of the old works. These barrages are near the heads of the Damietta and Rosetta branches of the Nile, about 15mi. north of Cairo; they will have 34 and 46

sluices respectively of 8 metres (26ft. 8in.) width, and each will have a lock. They will be able to maintain a level in summer 2ft. 2in. higher than before, *i.e.*, 16.35 metres above Alexandria mean sea-level. The total cost will be £E.3 millions, including some subsidiary works, and they are to be finished in 1939.

In the Sudan, the area commanded by the Gezira irrigation scheme, depending on the Sennar dam on the Blue Nile, was in 1937 extended by over 31,000ac. to a total of nearly 900,000 acres.

**Iraq.**—The Kut barrage on the river Tigris at Kut-el-Amara is to provide irrigation for about 1¼ million acres by maintaining a maximum head of 5.35 metres. The work is to cost £1,150,000 and is to be finished in 1938.

**Russia.**—The Greater Volga scheme includes the remodelling of the rivers Dnieper, Don, and Svir to produce hydro-electric power on a colossal scale, and also to make possible the eventual irrigation of 87 million acres of semi-arid and waste lands. A portion of this, the Kuibyshev hydro-electric power and irrigation development project, is included in the third five-year plan, and provides for the irrigation of 6¼ million acres in the south Volga area. (*See also DAMS.*) (F. NE.)

**Isherwood, Sir Joseph William** (1870–1937), British ship designer, was best known for developing the system of longitudinal framing now used throughout the world in the construction of cargo vessels and tankers (*q.v. Encyclopædia Britannica*, vol. 20, p. 534). His most recent development was the "arcform" used in building the first streamlined freighter in 1934 for the purpose of reducing the fuel costs necessary because of the wasteful wake of deep-draughted ships. Born June 23, 1870, Sir Joseph was knighted in 1921 and died in London, Oct. 24, 1937.

**Islam**, the religious system founded in the 7th century A.D. by the Arab prophet, Mohammed, now followed by perhaps some 210,000,000 people, mainly in Asia and North and East Africa, though there are some 5,000,000 Mohammedans in Europe (Turkey and the Balkan States) and about 20,000 in North America. About one-half of the Mohammedans throughout the world are subjects of Great Britain, France being, in virtue of her African possessions, the second greatest Mohammedan power; the attainment of sovereign status by Egypt has led to a movement in that country to secure it the acknowledged primacy in the world of Islam, and one party is desirous that the king of Egypt should assume the title of caliph, or "commander of the Faithful," which has been virtually in abeyance since its abolition in Turkey in 1924. The formation of an Italian empire in North and East Africa has made Italy a Mohammedan power of importance, and in recent years she has intensively cultivated Mohammedan friendship both in her own dominions and in Egypt, Arabia, Palestine, and other Islamic lands, in an apparent effort to compete with Great Britain as the friend of Islamic, particularly Arab, aspirations (*see ARABIA*); Mussolini has even hailed himself as "protector of Islam." On July 8, 1937, was signed at Saadabad in Teheran a mutual non-aggression pact between four of the principal Islamic countries—Iraq, Iran, Turkey, and Afghanistan. The world of Islam has been largely moved by the course of events in Palestine (*q.v.*), and the age-long rivalry between Mohammedan Arab and Jew, fanned to a flame by recent events in that country, has helped to foster Italy's schemes for extending her influence.

Pan-Arabism, the movement for giving greater expression to the community of ideals and culture among Arabic-speaking peoples, is rapidly increasing, especially in Iraq, Syria, Palestine, and the adjoining lands, though at present it finds its greatest urge rather in its negative attitude of hostility to Zionism and



to the extension of Jewish influence in Palestine than in any positive scheme of Islamic or Arab federation. Syria is perhaps the strongest centre of the Pan-Arab movement, and in Sept. 1937 a Pan-Arab congress, attended by delegates from all Arab lands except Yemen, met at Bloudan and protested strongly against the proposed partition of Palestine.

After a series of Arab outrages at Nazareth in September, the Government of Palestine found it necessary on Oct. 1 to deprive the grand mufti (*q.v.*) of Jerusalem, the spiritual head of Palestinian Islam, of the presidency of the Muslim council; he took refuge shortly after in Syria. Turkey and Iran, states with independent historical backgrounds, have been affected in very slight degree by the Pan-Arab movement, and the Muslim population of the Lebanon has also tended to remain deaf to Pan-Islamic endearments.

In India, there were fewer Hindu-Muslim clashes than usual during 1937, and in several provinces, after the April elections, Muslims united with Hindus to form ministries.

The Nizam of Hyderabad having provided a large sum towards the provision of a second mosque in London for the use of the Mohammedans in Great Britain, roughly 3,000 in number, the foundation-stone of the building—which will, it is claimed, be on completion a “miniature Taj Mahal”—was laid in Kensington on June 4 by the prince of Berar, in the presence of representatives of Egypt, Turkey, Iran, and other Muslim States.

**Isle of Man,** island in the Irish sea, between Great Britain and Ireland; part of the British Empire, but governed by a local parliament, the Tynwald court, consisting of the governor (appointed by the Crown), a legislative council, and a House of Keys of 24 popularly elected members. Capital, Douglas (pop. 19,329). Ruler and national flag, the same as for Great Britain.

**Area and Population.**—Area: 227 sq.mi. Population (census 1931): 49,308 (density, 21.7 per sq.mi.).

**Religion, Language, Education.**—The island forms an Anglican bishopric, Sodor and Man, attached to the province of York. In 1937 the abolition of this see and the attachment of the island to the diocese of Carlisle was mooted. English is everywhere spoken; 528 persons (1931) also speak Manx, the ancient Celtic language of the island.

Education, elementary and secondary, is undertaken by the Manx Government; in 1936 there were 5,545 elementary and 1,147 higher scholars; expenditure on education (1936–37) was £75,901 (elementary) and £28,455 (higher).

**Industry, Communications.**—About half the island is under crops, mainly corn and grasses; there are about 1,200 agricultural holdings. Entertaining British holiday-makers is the main industry. During 1937 the Calf of Man (south-west extremity of the island) was presented to the National Trust for preservation as a nature reserve. There are 71 miles of railway and electric tramway; two airports (near Castletown and Ramsey), and daily air services to England, Scotland, and Ireland.

**Finances, etc.**—British currency is in use. The revenue and expenditure (1935–36) were £534,148 and £526,671 respectively; the debt is about £580,000. Ten thousand pounds per annum is contributed to the Imperial exchequer. Revenue is raised mainly by customs duties; there is a small income tax. There is a police force of about 70.

## Isotopes of the Lighter Elements,

**Separation of.** The study of the differences in properties of the hydrogen isotopes and their compounds has led to an investigation of similar differences in the

case of the isotopes of other light elements. Aston and Harkins changed the relative abundances of isotopes by diffusion methods, and Hevesy effected similar changes by evaporation. The problem has been attacked in recent years by using three methods.

(1) Hertz has constructed a very ingenious cascade diffusion apparatus which makes use of many diffusion units arranged in such a way that the light fractions are fed from one unit to the preceding one and the heavy fraction from this unit to the following unit. In this way it is possible to increase greatly the effectiveness of the diffusion method as compared with the simple processes used by Harkins and Aston. This method depends upon the differences in the velocity of diffusion of the isotopic constituents because of differences in molecular weights, the velocity of diffusion being inversely proportional to the square root of the molecular weight.

Hertz has used cascades consisting of as many as 50 diffusing units, and two varieties of diffused media, one porous clay tubes and the other moving streams of mercury vapour. The latter appears to be the more easily constructed and more effective method. In this way he and others have succeeded in producing nearly pure neon isotopes of atomic weights 20 and 22, 16%  $C^{13}$  instead of approximately 1%  $C^{13}$  in natural carbon, 3%  $N^{15}$  as compared with 0.38% in the natural nitrogen, but slight concentrations only in the increased concentrations of the rarer oxygen isotopes of masses 18 and 17.

(2) The second method consists in distillation of the pure elements or their compounds. The first successful concentration of isotopes by distillation methods was made by Keesom and van Dijk in the case of neon and by Urey, Brickwedde and Murphy in the case of the hydrogen isotopes. These distillations were carried on at low temperatures and the differences in vapour pressures could be predicted by the use of well-known theories of the solid state. More recently the distillation of water has been used by Urey and Huffman and by Stedman to produce appreciable changes in the ratio of the oxygen isotopes. In this case the differences in vapour pressures are very slight, the ratio of the vapour pressures at 60°C being only approximately 1.006, and it is therefore necessary to use very efficient fractionation columns in order to secure appreciable separation. The heavy oxygen water produced in this case contained about .85% of  $O^{18}$ . The method can undoubtedly be used for the production of much higher concentrations, and with sufficient effort can be used for the preparation of nearly pure  $O^{18}$  water.

Closely related to the distillation method are the chemical exchange methods proposed and developed by Urey and his co-workers. The process in this case is carried out in much the same way as in the case of distillation, making use of efficient fractionation columns. The gaseous phase in the case of nitrogen was ammonia gas and the liquid phase a solution of ammonium sulphate or, in general, ammonium ion. Ammonium sulphate was fed to the top of such a distillation column, ran to the bottom, where sodium hydroxide was added to the ammonium removed from the solution by distillation. The ammonia gas was turned upward through the fractionation column and escaped at the top. In this way there was enough transport of heavy nitrogen down the column, since the percentage of heavy nitrogen in the ammonium sulphate solution is greater by about 2% than the percentage of heavy nitrogen in the ammonia gas rising in the column. In this way 2½%  $N^{15}$  was produced at the bottom. This method has the advantage over the Hertz diffusion method of producing large amounts of material, but requires much longer times for the attainment of the steady states where the maximum concentration is produced. It appears possible in this case also to produce high concentrations of the rarer isotopes with sufficient expenditure of time.



(3) The third method which is coming into use for the separation of isotopes is the centrifugal method originally proposed by Mulliken and developed by Beams. This method is similar in many ways to the distillation and chemical exchange methods except that the fractionation is produced by the centrifugal action. If liquid is placed in a rapidly rotating chamber the ratio of two isotopes at the centre of rotation and at the periphery will differ depending on the speed of rotation, the difference in molecular weights and the temperature, so that if one secures sufficiently high speeds of rotation and can keep the temperature sufficiently low appreciable separation can be secured. At present only slight changes in isotopic composition have been produced by this method, but it appears to be capable of development into a serious competitor of the distillation and exchange reaction methods.

Two phase counter-current methods have also been used for the partial separation of the lithium isotopes by Lewis and MacDonald. In this case two liquids were made to flow counter-currently in a vertical tube, the lithium amalgam moving downward and an alcoholic solution of lithium chloride upward through the column. The principle of the method is much the same as that of distillation except that the two phases are two immiscible liquids whereas in distillation the two phases are a gas and a liquid. These workers have succeeded in changing the ratio of the lithium isotopes by a factor of about 2.3. A somewhat similar method has been used by Taylor and Urey to produce slight changes in the relative amounts of the lithium and potassium isotopes. They used a solid and a liquid phase in the counter-current method, the solid phase consisting of a zeolite and the liquid phase of a water solution of a chloride of the alkali metal.

Such partially separated isotopes are now being used in much the same way as the heavy hydrogen or deuterium in studies on chemical kinetic, biochemical and transmutation problems. (See CHEMISTRY: *Isotopes*; HEAVY HYDROGEN.) (H. C. U.)

## Italian East Africa.

The official name promulgated by the Italian Government to designate Italian conquests and possessions in East Africa. In addition to Eritrea and Italian Somaliland (*q.v.*), it comprises the following divisions of Ethiopia (*q.v.*): Amhara, Harar, Galla and Sidamo, and Addis Ababa.

## Italian Literature.

The most important literary event in Italy during 1937 has been the completion under Gentile's direction of the *Enciclopedia Italiana*. The Italian academy has undertaken to prepare a dictionary of spoken Italian, under Bertoni. It appointed D'Annunzio as its new president, following the death of Marconi. Papini and Lucio Ambra are now members. The year saw the centenary of Leopardi. In poetry may be mentioned Betti's *Uomo e Donna*, Niroli's *La Nuova Fronde*, and Zoppi's *Azzuro sui Monti*.

Gentile's *Memorie italiane e Problemi della filosofia e della vita*, Spirito's *Lo spirito come ricerca*, Rensi's *Paradossi d'Estetica e Dialoghi dei Morti* are all important philosophical works. Cecchi publishes, in *Corso al Trotto*, a series of profound articles, and Benedetto Croce, in his review *La Critica*, had articles entitled *La Storia come pensiero e come azione*, forming an introduction to a volume of essays on history which were in preparation.

Among critical works should be indicated *L'Ultima Ascesa*, an introduction to the *Paradiso*, by Umberto Cosmo, already noted for his work on Dante; a study of Dostoevski by Donnini; *Pico della Mirandola*, by Anagnine; Cecchi's *Pittura dell'Ottocento e Novecento*; and Papini's first volume of his *Storia della Letteratura Italiana*. A noteworthy study of Italian-Swiss writers is found in *Scrittori della Svizzera Italiana*. Pancrazi considered modern

Italian literature in his *Scrittori Italiani dal Carducci al D'Annunzio*. Capasso issued the first volume of his study of D'Annunzio. Russo's *Ritratti e Disegni storici da Machiavelli a Carducci* is a serious contribution, and Rèbora has a thoughtful book *Civiltà Italiana e Civiltà Inglese*. Two important books appeared concerning Manzoni—Nicolini's *Peste e Untori nei 'Promessi Sposi' e nella realtà storica*, and the first volume of Parenti's *Bibliografia Manzoni*, a work of great value.

Among writers of fiction, Bontempelli made an experiment with his *Gente nel tempo*, published in a cheap edition. Moretti presents a somewhat Proustian picture of modern life in *Anna degli elefanti*. Paola Drigo's important novel, *Maria Zef*, is a sad and moving tale of mountain life. There were short stories and essays by Civinini, Palazzeschi, Mignosi, who died during the year, and Moravia. Lucio d'Ambra wrote the first volume of a series of literary biographies entitled *L'Autore delle duecento commedie*, devoted to Goldoni. The publisher, Mondadori, brought out the second volume of Goldoni's works.

Political science claims many books. Some of the Duce's speeches were published under the title *La Fondazione dell'Impero*, and one of Count Ciano's *La politica estera dell'Italia*. Ivon de Begnac brought out the second volume of his excellent *Life of Mussolini*; Curcio wrote *La politica dei Romani*; Maranini *La Rivoluzione fascista nel Diritto e nell'Economica*; de Michelis *Politica internazionale del Lavoro*; Orano *Gli Ebrei in Italia*; Paolini *Sistema rappresentativo del Fascismo*; Salvatorelli *La politica della Santa Sede dopo la guerra*; and Murri *Idea universale di Roma*.

Books about the Abyssinian war were numerous, among them being: *L'Albo dell'Impero*; *Atti del Secondo Congresso di Studi Coloniali* of the "Centro di Studi Coloniali" at Florence; Marshal Graziani's *Pace Romana*; Cannonieri's *Aventura tra gli Arussi*; and Starace's *La Marcia su Gondar*.

**Italian Somaliland:** see SOMALILAND, ITALIAN.

## Italy,

a kingdom consisting mainly of the peninsula projecting south into the Mediterranean from the mass of central Europe; the land boundaries, which reach as far north as the parallel of 46°40' N., being formed by France, Switzerland, Austria, and Yugoslavia. Capital, Rome. Ruler: King Victor Emmanuel III (b. 1869, *succ.* 1900). National flag: green, white, and red in vertical stripes, with the arms in the white stripe.

**Area and Population.**—Area: 119,740 square miles. Population (1936 census): 42,527,561, giving a density of 346.8 per square mile. In 1935, the balance of emigrant over immigrant Italians was 17,938. Over 99% of the population are Roman Catholics, and there are small numbers of Protestants and Jews. Elementary education is free and compulsory up to the age of 14; secondary schools are for the most part State-maintained; and there are 21 State and 5 "free" universities. The leading cities, with 1936 population figures, are: Rome 1,148,948, Milan 1,103,960, Naples 860,176, Genoa 625,355, and Turin 623,454. (X.)

**History.**—The year 1937 in Italy was notable for the development of a foreign policy to which the economic, financial, and internal affairs of the nation were definitely complementary if not subservient. On its broad lines, Italian foreign policy sought to change European and world attachment to the League of Nations as an instrument of international justice, and to oppose the principle of collective security as a guarantee of peace. That program meant cutting a path right through the post-war conception of European settlement. The events which hastened on the application of such a radical foreign policy were the bitter memories of Sanctions; misunderstandings with Britain; a declared fear of Bolshevism; events arising out of the civil war in



Spain; and dissatisfaction, among other things, with the League's delay in making any progress with the question of Italian sovereignty over Abyssinia.

Italy's method of pursuing its foreign policy was to identify Italy with Germany in a unity of purpose, creating a "Rome-Berlin Axis" of common policy; to fortify the political alliances which had bound Italy, Austria, and Hungary since the conclusion of the "Rome Protocols" of 1934 and 1936; to use the influence of these combinations on the countries of the Little Entente; to abandon Geneva; to combat the prestige of London and the British empire; to enter the Germano-Japanese Anti-Comintern Pact; and to perfect the nation's military strength through universal manhood training, rearmament, and a program of national self-sufficiency.

There was nothing concrete in the year under review to reveal what Signor Mussolini (in whose hands lay all power) held in aims as a substitute for the League and collective security. Some observers believed that his ultimate goal was a revival of the Four-Power Pact idea, with or without a fundamentally revised League of Nations. Others were convinced that his plan was to build up a confederacy of Fascist states in opposition to the democracies of Europe and the British empire. There were also those in Italy who felt that their country was being reluctantly driven into the arms of Germany by the inept diplomacy of London. Others again feared that the goal was simply an expansion of Italian empire. It is necessary to record these speculations in this survey, because they were present as characteristic and disturbing factors in the international relations of 1937.

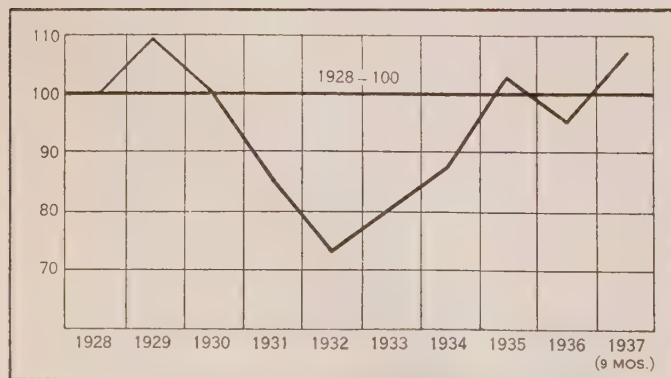
*Foreign Affairs.*—The chronicle of complicated events in 1937, on which the foregoing generalizations are built, begins with the signing of an Anglo-Italian Declaration in Rome, on Jan. 2, concerning assurances with regard to the Mediterranean. This exchange of assurances, popularly known as the "Gentleman's Agreement," disclaimed any desire by either party to modify the status quo in the Mediterranean area. Italy and Great Britain undertook to respect each other's rights and interests in the Mediterranean, and recognized freedom of entry, transit, and exit. Each promised not to encourage activities liable to impair good relations. This all-important declaration, calculated to allay suspicions created during the Sanctions period, was accompanied by the publication of notes guaranteeing the immunity of the Balearic islands from any Italian designs—thus in turn banishing fears born of Italy's attitude to the Spanish war. On Jan. 7 an Italian memorandum in reply to an Anglo-French note on foreign intervention in Spain clearly defined the policy of Rome. Italy agreed to the withdrawal of Italian volunteers and to the prevention of the despatch of others if all the interested Powers did likewise, and if such an agreement were followed up by another to stop indirect intervention. Parallel notes by Italy and Germany on Jan. 25 emphasized their common attitude; and

on Feb. 20 severe penalties came into force in Italy against the further enrolment of volunteers. But press and other polemics on the interpretation of what constituted indirect intervention kept Italy and Europe in a state of tension. British rearmament, which at first had received a good press in Italy, began to be criticized. Italian anger over the invitation to Haile Selassie to attend the coronation of King George VI; the atmosphere surrounding the visit of Signor Mussolini to Italian North Africa when (March 18 at Tripoli) he made a demonstrative speech in favour of Islam; Italian fears of the Popular Front elements in France passing to Communist extremes; Italian indignation at hostile foreign sneers about the set-back to a column of Italian volunteers at Guadalajara; the decision on April 10 to establish an army corps in Libya; discontent with the conduct of France, Britain, and the League on the non-intervention problem; and a bitter intensification of newspaper war—all these things had already virtually negated the spirit if not the letter of the Mediterranean Agreement. In Italian eyes the incapacity and ill-will of Geneva seemed manifest. Contacts with Germany became more intimate. Rapprochement negotiations had been opened with Yugoslavia, and a new treaty was signed on March 26. General Göring went to Rome on April 26 and Baron von Neurath on May 2. A news boycott was placed on the coronation of George VI. The king and queen of Italy made a State visit to Budapest on May 19. Abyssinia was not dealt with by the League at the Council meeting of May 24. On June 2, Marshal von Blomberg was fêted in Italy. Following the Leipzig incident, Italo-German withdrawal from naval control in Spain was announced on June 23; and the Italian cabinet approved schemes for "Defence of the State Activities" and national self-sufficiency.

After a long period of reserve, it was semi-officially stated that the total number of Italian volunteers in Spain did not exceed 40,000. On Aug. 27 the press published the names of 12 Italian generals serving with General Franco's forces. Pictures of Italians at the scene of operations thereafter became an open feature of Fascist newspapers. Casualty lists were published from time to time—the latest in 1937 being that of Oct. 29, when the figures totalled 763 killed and 2,675 wounded "for the cause of the Fascist ideal in the anti-Bolshevist Spanish war." (See NON-INTERVENTION COMMITTEE; SPAIN, CIVIL WAR IN.)

And at that very moment when Great Britain and France were inviting 10 other states to confer on "submarine piracy" in the Mediterranean, Russia (Sept. 6) presented a note in Rome accusing Italy of sinking Soviet ships. That was the last straw for Italians. Italy refused to sit at the same piracy conference table as its accusers; and rejected the Nyon Plan, although accepting (Sept. 21) the Anglo-French proposal for a Paris meeting of naval experts to consider Italian "parity rights" in naval patrol.

On Sept. 25 Signor Mussolini made a State visit to Germany, where he received a spectacular welcome. In ceremonies and in talks with Herr Hitler (Sept. 25–29) he made the Rome-Berlin Axis more solid than ever; and on Nov. 6 he aligned Italy with Germany and Japan by formally subscribing to the Germano-Japanese Anti-Comintern Pact, thus providing for tri-partite consultation and action against those at home or abroad engaged "directly or indirectly" in the service or promotion of Comintern activities. In the midst of renewed newspaper tirades against democracy and against British policy in Palestine and Egypt, the Italo-Yugoslav rapprochement was completed by Belgrade's recognition of Italian sovereignty in Abyssinia. In Italy this was considered to be the beginning of the end of the Little Entente, with all that that implied in post-war European relations. Italy's foreign policy crystallized. Manchoukuo was recognized as an independent state on Nov. 16. Signor Mussolini, in the *Popolo d'Italia*, expressed sympathetic conviction that Japan would be



ITALY: Industrial production index (*The Annalist*)



victorious in China. On Dec. 12, Signor Mussolini announced that Italy had decided to leave the League of Nations. A telegram of resignation was despatched to the League secretary that night.

**Home Affairs.**—The only constitutional change carried out during the year was a measure (Jan. 9) which invested the cabinet with immediate powers to issue all necessary regulations in the event of a state of war or a state of neutrality in Italy. Such powers were previously vested in the king, but were transferred to parliament during the World War. They have now been handed over to the cabinet, which means in this case the *Capo del Governo*, Signor Mussolini. On March 2 the Fascist Grand Council decided on the adoption of a five-point program: (1) a further increase of Italy's armed strength; (2) a continuation for five years of the functions granted to the general commissariat for the manufacture of war material; (3) complete militarization of Italian man-power from the ages of 18 to 55; (4) maximum self-sufficiency as far as war needs are concerned, and the sacrifice, even total if necessary, of civil needs to military exigencies; (5) the collaboration of science and of Italian technicians in the achievement of the above aims. Italian estimates on the available man-power within the age limits of 18 and 55 were 8,800,000 effectives—which seemed an enormous figure. Application of this program affected the social life of the Italian people throughout the whole year. On April 13 a law was passed to ensure the teaching of "military culture" in all schools. A first report on the new system (begun in 1936) of training the youth of Italy in military affairs before they are conscripted for the usual army service stated that 550,000 young men, divided into 7,000 instructional classes, had gone through a course of training, and that 95% of them had gained first-class military certificates. Other laws for the inculcation of military ideas in the young were passed. The most important of these was a decree, dated Oct. 27, which amalgamated all the various children's Fascist organizations for both boys and girls into one enormous institution under the direct control of the secretary of the Fascist party. Boys and girls from the ages of six years onwards were thus gathered into a training bloc of over seven million souls.

The number of persons belonging to the Fascist party or affiliated to its various organizations on Oct. 29, 1937,—the beginning of "the Sixteenth Year of the Fascist Era"—was 11,408,153. Of these, 2,152,240 were actual members of the party, in that they held the "Party Ticket." On Feb. 12 all Italy rejoiced in the birth at Naples of a son and heir (Victor Emmanuel, Prince of Naples) to Crown Prince Umberto and Princess Marie José. (I. S. Mv.)

**Trade and Communication.**—Over 70,521,000 ac. are under cultivation, of which about 25.5% was devoted to cereals, 3.5% to leguminous plants, 3.5% to vines, and about 3% to olives. Mining output of natural resources in 1935 (metric tons) was: iron pyrites and iron ore, 1,384,900; bauxite, 170,000; zinc, 144,000; mercury, 118,550. The year 1937 ended with a trade deficit of over £59,500,000, exclusive of trade with the Italian colonies. Imports were increased by about £21,600,000, and Germany is increasingly Italy's best customer. The 1937 wheat crop was a record one of 80,561,670 quintals (84 million quintals are estimated as required for self-sufficiency). Communications included (1935) 22,980 km. of railways and (1936) 20,631 km. of national roads; (1936) a mercantile marine of 1,246 vessels; and (1935) 20,802 km. of air lines.

**Finance and Banking.**—The unit of currency is the lira, the average rate of exchange for sterling during 1937 being 95 lire to the pound, or 19 to the dollar; the par rate of exchange is 92.46 lire to the pound. Budget receipts for 1936–37, as published on Dec. 15, 1937, showed £267,164,179 (all sterling figures here given are at the par rate of exchange); and expenditures were: "Ordinary" £253,223,015, and "Extraordinary" £189,476,-

530. There was therefore a surplus of £13,941,164 over ordinary expenditure, but a total deficit of £175,535,366. The £13,941,164 "ordinary" surplus was carried over to the receipts of the Extraordinary Budget, the details of which were, and are, not disclosed. On Oct. 10 a 10% capital levy was imposed on all foreign and Italian limited companies, assessed on paid-up capital and reserves as at Oct. 5, 1936. About 43 millions is expected to be raised from this, which, if industrialists borrow from the Bank of Italy, should cover threatened Treasury deficits until Oct. 1938. The Banca d'Italia is the only bank of issue, as the notes in circulation (Feb. 1937) in Italy and East Africa amounted to 15,677 million lire. The proportion of gold reserve for circulation was 25.64%.

**Defence Forces.**—As has already been indicated, practically the whole male population of military age and under has been organized on a military basis. (See also NAVIES OF THE WORLD; AIR FORCES: *World*.)

**Ives, Frederic Eugene** (1856–1937), American inventor, who originated the half-tone process of photo-reproduction, the modern binocular microscope, and the intaglio process which led to rotogravure. As he neglected to patent several of his important inventions, he always remained in modest circumstances. He styled himself "an amateur inventor," publishing his autobiography under that title in 1928. He died in Philadelphia, May 27, 1937.

**Jamaica**, a British colony in the West Indies; language, English; capital, Kingston (estimated population in 1935, 115,000); Governor, Sir Edward Denham. The area is 4,540 square miles. The population by the latest census (1921) was 858,118 and was officially estimated at 1,138,558 (1936). The colony is administered by a governor and legislative council of whom a minority is elected. Jamaica has extensive shipping connections and regular air service with outside points. It has 210 miles of Government-owned railways, and an extensive highway system. Imports and exports for 1936 were valued at £4,923,931 and £3,807,239 respectively, a slight decrease from 1935. Imports are principally foodstuffs and manufactured articles, 73.1% from the British Empire (Great Britain, 39.6%; Canada, 16%), and 16.4% from the United States. Bananas comprise half the exports, with sugar, spices, rum, and coffee also important. Exports went chiefly to Great Britain (55%), Canada (29.5%), and the United States (7%). Production is preponderantly agricultural. The banana industry, valued at £2,250,000 annually, leads, but is gradually losing pre-eminence, with sugar and rum production on the increase. The orange crop in 1936 doubled that of 1935 and quadrupled that of 1934, in consequence of the development of the New Zealand market. The monetary unit is the British pound sterling (approximately \$5). Revenue for the year 1935–36 was £2,121,965, expenditure £2,178,228. The public debt was £3,780,653 (1936). Jamaica had 653 Government-aided elementary schools (1936) with 150,557 enrolment, maintained at a cost of £187,309, and 24 grant-aided secondary schools. (L. W. BE.)

**Jameson, John Franklin** (1859–1937), American historian and chief of the Manuscript Division of the Library of Congress from 1928–37, was born near Boston, Mass., Sept. 19, 1859. After graduating from Amherst College in 1879, he studied at Johns Hopkins where he taught for several years after receiving his doctor's degree in 1882. From 1888–1901 he was professor of history at Brown, leaving to assume headship of the University of Chicago department of history in 1901. In 1905 he became director of historical research for the Carnegie Institution of Washington, a post held until he



undertook his work in the Library of Congress. Although the author of several historical studies, he was best known as an editor, his productions including the *Correspondence of John C. Calhoun* (1900) and the *Original Narratives of Early American History* (1906-17). From 1895-1901 and from 1905-28, he served as managing editor of the *American Historical Review* and most recently (1922-1936) as chairman of the committee of management for the twenty-volume *Dictionary of American Biography*. He died in Washington, Sept. 28, 1937.

**James Tait Black Memorial Prizes:** see LITERARY PRIZES: Great Britain.

**Japan,** an Empire, capital, Tokyo; ruler, Emperor Hirohito; premier, Prince Fumimaro Konoye. It consists of a chain of islands in the western Pacific, stretching from South Sakhalin (50° of latitude) to the South Seas Mandated islands (which lie near the equator) and of the Korean peninsula, on the mainland of Asia, and the small Kwantung leased territory, with the city of Dairen, on the Liaotung peninsula. Japan Proper consists of the four main islands of Honshu, Hokkaido, Shikoku and Kyushu, while Korea, Formosa, and South Sakhalin are administered as colonies. This is also true of the South Seas islands, which were granted to Japan under a mandate from the League of Nations after the World War. The total area of the Japanese Empire is 263,359 sq.mi., of which Japan Proper accounts for 148,756 square miles. Population of the Empire (census, Oct. 1, 1935) was 97,697,555, divided as follows: Japan Proper, 69,254,148; Korea, 22,899,038; Formosa, 5,212,426; Kwantung Province and South Manchuria railway zone, 1,656,726; South Sakhalin, 331,943; South Seas Mandated islands, 102,537. By the end of 1937 the population of the Empire was in excess of 100,000,000, that of Japan Proper being estimated at 71,252,800 on Oct. 1, 1937. Population of leading cities (census, 1935): Tokyo, 5,875,667; Osaka, 2,988,874; Nagoya, 1,082,816; Kyoto, 1,080,593; Kobe, 912,179; Yokohama, 704,290.

**History.**—(For the Chinese-Japanese War see that heading.) The Japanese Imperial Diet is bicameral, consisting of a House of Representatives, elected by universal suffrage, and a House of Peers. The latter is made up of all Imperial Princes, other Princes and Marquises, of elected representatives of the other orders of

the aristocracy, Counts, Viscounts and Barons, of representatives of the wealthy business classes and of statesmen and scholars appointed in recognition of public services. There were 408 members of the House of Peers in January, 1937. The results of the last election to the House of Representatives (held in April, 1937) by party and number were as follows: Minseito, 179; Seiyukai, 175; Social Mass, 36; Showakai, 18; Kokumin Domei, 11; Tohokai, 11; Independents and small groups, 36; total, 466.

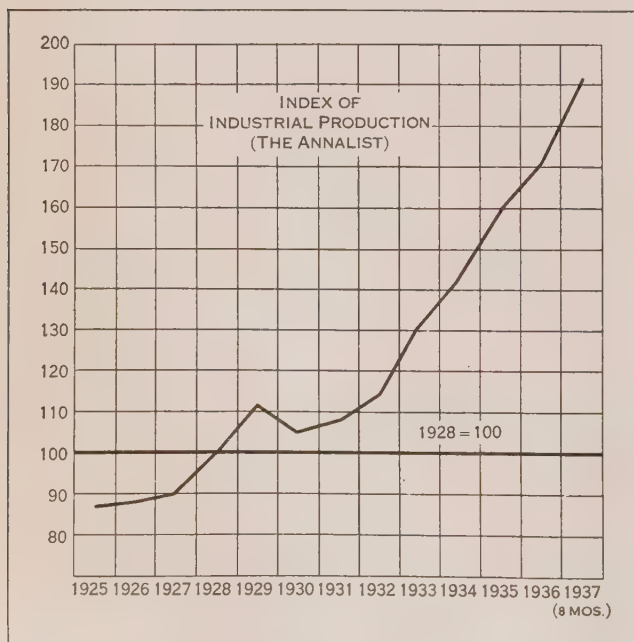
There was in 1937 little difference between the two traditional large parties of Japan, the Minseito and the Seiyukai, as regard political program. The former was stronger in the towns, the latter in the country districts. During the period of 12 or 13 years after the World War when parliamentarism was at its height in Japan, the Minseito was considered somewhat more liberal in internal and international policy and more orthodox in finance than the Seiyukai; but the march of events has largely obliterated the former issues between these parties. The Social Mass party, which polled its largest vote of about 900,000 in the last election, is committed to a platform of moderate socialism. The Tohokai is a rightwing semi-fascist grouping, while the Showakai and Kokumin Domei are small groups of secessionists from the Seiyukai and Minseito respectively. Since the political outbreak of May 15, 1932, there have been no party cabinets in Japan. All cabinets, including the present one, headed by Prince Fumimaro Konoye, have been formed on a national basis, although only one cabinet, the short-lived one of General Senjuro Hayashi, failed to include representatives of the larger parties.

**Trade and Communications.**—Japan's exports in 1936 were 2,692,976 yen and imports were 2,763,681 yen. Exports in 1937 were 3,175,424 yen; imports were 3,783,177. Among Japan's more important exports are cotton goods, raw silk, rayon tissues, machinery, canned fish and other foodstuffs, woollen and knitted goods, ceramics and rubber goods. Its more important imports include raw cotton, wool, petroleum, scrap iron, iron ore, lead, copper, tin, machinery, and equipment.

There were 14,612mi. of Government and private railways on Dec. 31, 1935, in Japan Proper, besides 2,782mi. in Korea, 935mi. in Formosa and 300mi. in South Sakhalin. A total of 3,563 steamers of 3,964,175 gross tons were registered in Japan in 1936. The number of sailing ships was 15,531; the gross tonnage, 918,673. Japan had 235 commercial aeroplanes on Oct. 1, 1935. Air routes link up the main cities of Japan Proper and regular air service is maintained between Japan Proper, Formosa, the South Seas islands, Korea and Manchoukuo. An air route between Japan and Tientsin has been installed recently. During the year 1935-36 Japan's aeronautical companies carried 11,877 passengers, 75,643 kgs. of goods and 265,564kgs. of mail. There were 8,931 telegraph stations in Japan Proper in 1936 and 11,471 post offices. There were 232,000mi. of telegraph lines, handling about 65,000,000 messages annually. In March 1936, there were 5,310 telephone exchange offices in Japan Proper, with 870,476 subscribers.

**Agriculture, Manufactures, and Mining.**—There were 5,610,607 farm households in Japan at the end of 1935. This figure shows little change from year to year. Much the most important crop in Japan was rice, with the breeding of silk worms as a secondary source of income for farmers in some parts of the country. Other agricultural products were wheat, rye, barley, oats, potatoes and sweet potatoes. At the end of 1935 there were in Japan 1,448,481 horses, 1,684,461 cattle, 1,063,000 swine, 47,303 sheep, and 278,000 goats.

Japan's main natural resources are its fisheries, which provide an important item in the national diet, its fertile and well cultivated rice-lands, its abundant supply of cheap hydro-electric power and the timber which supplies raw material for its large and growing paper industry. In the main, however, Japan is

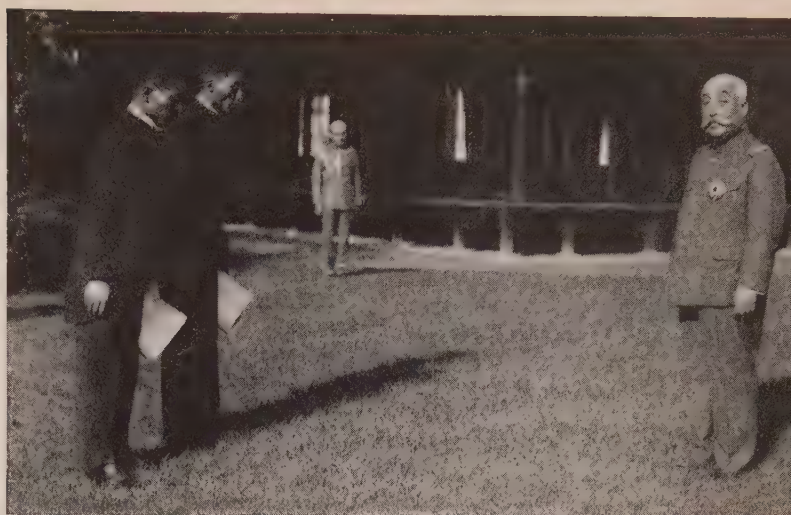


JAPAN: Industrial production





PRINCE FUMIMARO KONOHE, Japan's prime minister



FIELD MARSHAL PRINCE NASHIMOTO, one of the five members of the powerful Military Council, which is responsible to the emperor only



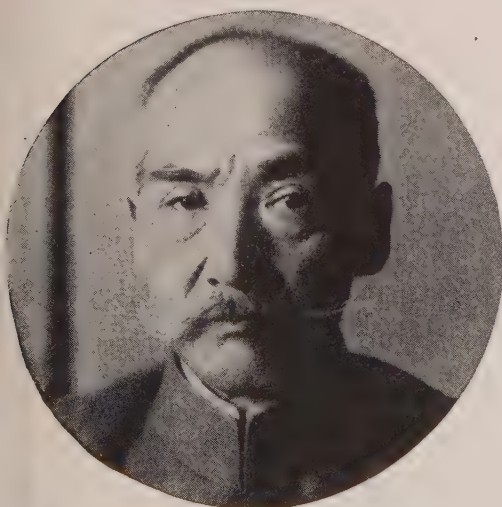
GENERAL SEISHIRO ITAGAKI, chief of staff on the Asiatic mainland for General Ueda



GENERAL COUNT TERAUCHI, minister of war and member of the Military Council



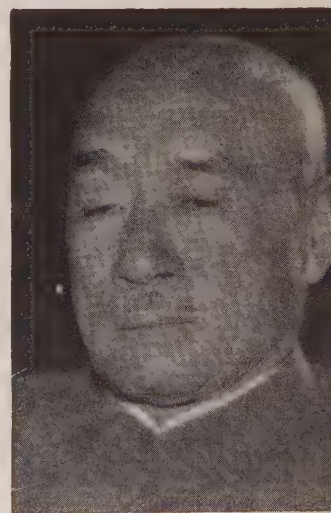
HIS IMPERIAL HIGHNESS FIELD MARSHAL PRINCE KAN-IN, chief of the General Staff and member of the Military Council



GENERAL KENKICHI UEDA, commander of Japan's Kwantung army in China and member of the Military Council



LIEUTENANT GENERAL KENJI DOIHARA, so-called "super-spy," attached to the Tokyo General Staff



GENERAL SUGIYAMA, inspector general of military education and member of the Military Council



scantly supplied with natural resources; and its industries have been built up on a basis of importing minerals and raw materials from abroad and working them up as manufactured goods for domestic use or for export.

Industry gives employment to about 6,000,000 people in Japan, of whom about half are employed in tiny workshops employing less than five persons. These small workshops, where wages are extremely low, are an important factor in Japan's economy. The most important single industry is the output of textiles. Japan leads the world in the production of rayon and exports of cotton cloth reached the figure of 2,709,884,000 sq.yds. in 1936. Japan's most striking gains in recent years have been in the heavy industries, such as metallurgy, machine-building and chemicals. Japan ranks fourth as a producer of chemicals. The value of its output of machinery and tools was 1,458,000,000 yen in 1935, as against 410,133,000 yen in 1931. Other important industries are the generation of electrical power, food products, paper, wood products and ceramics. Apart from coal, Japan is not rich in minerals; but mining output has been increasing under the stress of industrial demand. In 1936, Japan produced 38,067,000 tons of coal, as against 34,904,000 tons in 1935; 78,114 tons of copper, as against 69,289 in 1935; 21,114 kgs. of gold, against 17,837 kgs. in 1935; 38,204,620 hectolitres of petroleum products, against 34,904,000 hectolitres in 1935.

**Banking and Finance.**—The unit of currency is the yen (equivalent to 29.15 American cents at the end of 1937). The budget for 1937–38 (the Japanese fiscal year runs from April to April) was 2,813,937,971 yen and was the largest in Japanese financial history. The preliminary budget estimate for 1938–39 is 2,868,000,000 yen. Both these budgets leave out of reckoning the financing of the military operations in China. A sum of almost 2,600,000,000 yen had been appropriated for this purpose during 1937 and was mainly to be raised by loans. Japan's national debt has been increasing steadily since 1931. At the end of 1936 it amounted to 8,522,439,750 yen, owed within the country and 1,331,860,889, owed abroad, in America, Great Britain and France. By the end of 1937 the total debt was in excess of 13,000,000,000 yen, leaving out of account the added burden of the foreign debt because of the greater depreciation of the yen, in comparison with the dollar and the pound.

The Bank of Japan is the central bank and has the privilege of issuing convertible banknotes. The Yokohama Specie Bank is in charge of foreign exchange transactions and finances foreign trade. Commercial banking is largely in the hands of seven large banks: the Mitsui, Mitsubishi, Dai-ichi, Sumitomo, Yasuda, Daihyaku and Sanwa. Foreign banks operating in Japan include the Hongkong and Shanghai Banking Corporation, the Chartered Bank of India, Australia and China, the National City Bank of New York, the Banque Franco-Japonaise, and the Nederlandsch-Indische Handelsbank.

**Education and Religion.**—There were 46,138 schools of all kinds in Japan in 1935, with 14,035,823 students. Elementary education is compulsory, and the percentage of attendance among children of school age is 99.58. Japan has 45 universities with 71,162 students. Freedom of religion is guaranteed by the Japanese Constitution. The latest official statistics (end of 1933) reveal 41,127,307 Buddhists, 16,525,840 Shintoists, and 439,444 Christians in the country.

**Army and Navy.**—The Japanese army is raised on a basis of universal liability to service of all male Japanese between the ages of 17 and 40. Its peacetime strength is officially stated at about 230,000, organized in 17 divisions; no official figures have been published of the war strength reached at the end of 1937. The strength of the navy, as of Sept. 30, 1936, was officially stated at 302 warships, of a total tonnage of 1,134,823, including nine bat-

tlehips, 12 first class and 25 second class cruisers, six aircraft carriers and three seaplane carriers. Japan gave two years' notice of denunciation of the Washington Naval Treaty at the end of 1934. After an abortive conference at London in Dec. 1936 and Jan. 1937, Japan, along with all other signatories of the Washington Naval Treaty, resumed full freedom of naval construction. (See also CHINESE-JAPANESE WAR.)

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**Japanese-Chinese War:** see CHINESE-JAPANESE WAR.

**Java,** fourth in size but most important in population and resources among the islands of the Dutch East Indies, is separated from Sumatra to the west by Sunda strait and from Bali to the east by Bali strait. With the adjacent small island of Madura, Java in 1930 had a population of 41,719,524, mostly people of Malay race professing the Mohammedan religion. The area of Java and Madura is 50,752 square miles. Java is the most densely populated land in the world, with 821 inhabitants to the square mile. Because of this density of population the economic crisis of 1929–33, during which period the quantity of Dutch East Indian exports declined by 17%, the value by 67%, brought a good deal of unemployment and distress. The number of labourers employed on large estates decreased from 1,200,000 to 600,000. The Government has endeavoured to cope with this situation by organizing migration to the less thickly peopled neighbouring island of Sumatra and by encouraging the development of native industries. Another noteworthy result of the crisis was the marked increase in the purchase of cheaper Japanese goods. Japan's share in the import trade of the Dutch East Indies increased from 10% in 1928 to 30.9% in 1933. Further growth has been checked by the introduction of a quota system for Japanese goods. Approximately 40% of the land in Java is under cultivation, the remainder consisting mainly of mountains and forests. The island produces 99% of the world's supply of quinine and is rich in sugar, coffee, tea, cocoa, indigo, spices, tobacco, rubber, tin, and petroleum. (W. H. CH.)

**Javelin Throw:** see TRACK AND FIELD SPORTS.

**Jazz.** The development of jazz during 1937 emphasized more than ever that this peculiarly modern and characteristically American form of art represents a treatment of musical materials rather than a definite kind of music. Jazz itself has been most accurately defined as "the distortion of the conventions of music." Orthodox music can be distorted not only rhythmically, but also from the standpoint of melody, harmony, tone colour, and form, and all of these distortions enter significantly into up-to-date jazz. "Swing," which is the current equivalent of "hot jazz," may be considered the latest and the most complicated form of musical distortion. After eliminating the vast amount of nonsense that has been written about "swing," it becomes obvious that this form of jazz consists of nothing more than improvised variations on a theme. These improvisations may be individual, with one member of a band, or collective, with the entire ensemble treating the basic melody independently and simultaneously. That the tune is often completely buried is considered no handicap.

Essentially such music is a revival of the raucous jazz that flourished before the World War, with the difference, that the modern instrumentalists are technically far superior to those of the past. Even the best performers, however, inevitably repeat



the same tricks and patterns *ad infinitum*, and the general interest in their playing seems due chiefly to astonishment at spectacular technique. Devotees of "swing" take these performances very seriously. With this constant emphasis on treatment and interpretation, modern popular music has swung away from publication toward a concentration on arrangements, phonograph records, and radio performances. The skilled arranger is today more important than the composer himself, and much of the recent jazz consists merely of new arrangements of old tunes. Outstanding arrangers who have come to the fore as creators and conductors are Larry Clinton, responsible for *Satan Takes a Holiday*, and Will Hudson, who wrote the popular *Organ Grinder's Swing* (definitely a jazz ornament rather than a tune) and *Mr. Ghost Goes to Town*. Most of this new music is written for performance rather than publication, and means little or nothing in its printed form. Duke Ellington has added to his past successes with *Caravan*, and the authentic Negro style is maintained by such interpreters as Cab Calloway, Louis Armstrong, "Fats" Waller and Art Tatum, with Reginald Forsythe developing rapidly as a sophisticated composer. But white men have gone even further with "swing," led by Benny Goodman, Bunny Berigan, Louis Prima and the Dorsey brothers. Eddie Duchin and Alec Templeton have given new character to popular piano-playing, and the successful band leaders have included Shep Fields, Horace Heidt, Leo Reisman, Sammy Kayes, Richard Krimmer, Abe Lyman, Ray Noble and such established names as Guy Lombardo, Fred Waring, Wayne King, Glen Gray, Rudy Vallee, Vincent Lopez, and Paul Whiteman. On the screen, the teams of Gordon and Revel and Warren and Dubin have held their own, with George Gershwin's posthumous work setting a high standard. Rodgers and Hart contributed some good scores to the stage, while Hoagy Carmichael and Stanley Adams came through with the individual success, *Little Old Lady*. Such stars as Irving Berlin and Jerome Kern remain undimmed in the heaven of popular music, with Arthur Schwartz, Vernon Duke, Johnny Green, Nat Shilkret, Billy Hill and others still capable of turning out a good tune. It has been definitely proved, however, that jazz today demands adaptation rather than invention, and all signs point toward a continued development in the same direction. (See also SONGS, POPULAR.)

(S. Sp.)

**Jewels:** see FASHION AND DRESS: *Jewels*; GEMS AND PRECIOUS STONES.

**Jewish Race, Distribution of.** For the following reasons it is difficult to ascertain the exact number of the Jews (according to religion) at a given year on the basis of the official census figures:

1. In various countries, such as Iran, Yemen, Brazil, no census at all has so far been taken.
2. In some other countries, for instance, England, France, Belgium, United States, Argentina, the census does not indicate the religion of the inhabitants.
3. The last census available was not carried out in the same year in all countries, but in different years during the period 1921 to 1936.

We, therefore, have either to rely entirely on estimates (as in cases 1 and 2), or to complete the last census figures by estimates mainly based on data regarding natural increase and migration since the last census, in order to find out the number of Jews at the end of the year 1937.

The following is the approximate number of the Jewish race in those countries of the world estimated at having more than 10,000:

United States . . . . .	4,650,000	Great Britain and	
Poland . . . . .	3,275,000	North Ireland . . . .	340,000
Russia (European) . . .	3,000,000	France . . . . .	270,000
Rumania . . . . .	800,000	Argentina . . . . .	270,000
Hungary . . . . .	440,000	Austria . . . . .	180,000
Palestine . . . . .	420,000	French Morocco . . .	175,000
Germany . . . . .	365,000	Canada . . . . .	170,000
Czechoslovakia . . . . .	360,000	Lithuania . . . . .	160,000
World Total . . . . .	16,651,000		

Distribution of the Jews in the Americas

		According to the last Census or Estimate					Estimated Number of Jews at the End of the Year 1937
		Total Population		Jewish Population			
		Year	Number	Year	Number	Per cent of total Pop.	
1	United States . . . . .	1930	122,775,046	1927	4,228,000	3.5	4,650,000
2	Argentina . . . . .	1935	12,402,068	1934	253,000	2.0	270,000
3	Canada . . . . .	1931	10,376,786	1931	155,014	1.5	170,000
4	Brazil . . . . .	1930	40,273,000	1935	50,000	0.1	55,000
5	Uruguay . . . . .	1931	1,903,083	1935	20,000	0.5	25,000
6	Mexico . . . . .	1930	16,522,722	1935	20,000	0.1	20,000
7	Cuba . . . . .	1931	3,962,344	1933	7,800	0.2	10,000
8	Chile . . . . .	1930	4,287,445	1935	9,000	0.0	10,000
9	Colombia . . . . .	1928	7,851,000	1935	3,000	0.04	4,000
10	Peru . . . . .	1936	6,500,000	1935	2,500	0.01	3,000
11	British Guiana . . . . .	1931	310,933	1925	1,786	0.6	2,000
12	Jamaica . . . . .	1935	1,121,823	1935	2,000	0.2	2,000
13	Dutch Guiana (Surinam) . . . . .	1935	231,480	1934	800	0.4	1,000
14	Curacao . . . . .	1935	79,395	1933	566	0.7	1,000
15	Paraguay . . . . .	1935	926,580	1938	1,000	0.01	1,000
16	Venezuela . . . . .	1926	3,026,878	1926	882	0.03	1,000
17	Other Parts of America . . . . .	..	..	..	..	..	1,000
Total in America . . . . .							5,226,000

**Jewish Religious Life.** A grave menace to the Sabbath which is cardinal in Jewish religious life, fell away in 1937 when the League of Nations Council removed from consideration a plan of calendar reform which would make the seventh day Sabbath fall in successive years on different days in the week. Another menace developed in the recommendation of the Palestine Royal Commission that Jerusalem be excluded from the proposed Jewish State in Palestine. This suggestion aroused condemnation among all Jews, and also from such sources as the Archbishop of Canterbury.

The most marked changes in Jewish religious life in 1937 arose out of political conditions. Judaism continued to lose ground in Soviet Russia as more of the youth grew up indoctrinated with anti-God teachings. In Germany the remorselessly methodical "liquidation" of Jews continued, involving the closing of numerous historic Jewish communities in small towns, the closing of the B'nai B'rith lodges, the arrest of prominent rabbis, and towards the end of the year the Jews of Danzig also came under unrestrained Nazi control. In Rumania, Jewish communities continued to suffer, while the steady grinding to destruction of 3,000,000 Jews in Poland continued, accompanied by riots in which synagogue worshipers were attacked, synagogues burnt, and the Jewish ritual killing of cattle was made illegal. In Italian North Africa Jews were made to suffer because of refusing to open their stores on the Sabbath, and the Jews of Italy were subjected to a Fascist drive in the press to constrain their freedom of thought. Resultant communal divisions led the executive board of the Union of Jewish Communities to resign.

On the other hand, organized efforts to offset intolerance and cultivate intercreedal goodwill were particularly noticeable in England and the United States. It is worthy of record that Hammonton, N.J., built a synagogue for its little Jewish community of 18 families largely with money given by Christians in response to the appeal of Christian ministers of the town.

The quinquennial meeting in Marienbad of the Kenesia Gedola of the Agudath Israel was an impressive demonstration of the strength of right wing orthodoxy throughout the world.



Death claimed Nathan Birnbaum (Mathias Acher), a former radical who became a leader of European right wing orthodox Judaism, Prof. Ezekiel Moses Ezekiel of Bombay, Aaron Hyman, Talmudic scholar of England and Palestine, Rabbi Abner Oklanski, head of the rabbinical academy at Telz, and the Rev. Henry Pereira Mendes, dean of the rabbinate in the United States.

See *American Jewish Year Book XXXIX*, 1937–38, pp. 205–502. (See also ANTI-SEMITISM.) (D. DE S. P.)

**Jewish Welfare Board** carries as a sub-title "National Organization of Young Men's Hebrew Associations, Young Women's Hebrew Associations, and Jewish Community Centers." This comprehends the character of the local organizations that are affiliated with the Board, numbering 318 in various parts of the United States and Canada. The Jewish Welfare Board was organized April 9, 1917, in behalf of the Jewish men in the Army and Navy of the United States. The Council of Young Men's Hebrew and Kindred Associations, which was organized Nov. 2, 1913, was merged with the Jewish Welfare Board July 1, 1921.

The purpose of the board, briefly stated, is "to promote the social welfare of soldiers, sailors and marines in the Army and Navy of the United States" and "to promote the religious, intellectual, physical and social well-being and development of Jews, especially young men and women." The board advises its affiliated organizations as to programs, membership policies, problems of management, finances, personnel, and community relationships; makes community surveys; plans programs; co-operates in the training of personnel; and publishes *The Jewish Center* quarterly and *The Jewish Center Supplement*.

The Y.M.H.A.'s, Y.W.H.A.'s, and Jewish Community Centers conduct programs of Jewish, cultural, educational, recreational, social, physical education, health, camping, civic, and communal activities. They own 233 of their buildings, valued at \$35,000,000, and they have an estimated membership of 370,000, the membership including all ages and both sexes. Their annual expenditures in 1936 amounted to \$4,600,000. The National Association of Jewish Center Workers, composed of members of professional staffs, which meets annually, held its last convention in Indianapolis May 19–23, 1937. The annual meeting of the Jewish Welfare Board took place April 25, 1937, in New York city. Its president is Judge Irving Lehman and its executive director, Harry L. Glucksman.

(F. L. W.)

**Johns Hopkins University** is located in Baltimore, Md. Enrolment for 1937 in the several schools of the University was as follows: School of Higher Studies of the Faculty of Philosophy, 310; School of Higher Studies in Education, 34; Engineering, 329 (including 25 graduate students); Arts and Sciences, 521; Business Economics, 108; Medicine, 287; Hygiene and Public Health, 150. Enrolment in the afternoon and evening courses was 3,299 and in the summer school 870. At the end of the fiscal year the endowment of the University was valued at \$29,874,437 and income from all sources for the year was \$2,950,180. Simon Flexner, former head of the Rockefeller Institute for Medical Research, and John W. Garrett, former Ambassador to Italy, were added to the Board of Trustees. Johns Hopkins received during the year several substantial bequests, including \$323,717.33 from the James Swan Frick estate, \$50,000 from the estate of Miss Amelia Marburg, and the residue of the estate of Louis J. Boury of New York, which, it is estimated, will total \$1,000,000. The main library, containing more than 500,000 bound volumes, was enriched during the year by the will of the late Leonard L. Mackall, who left the University

his private library of approximately 10,000 volumes.

**Johnson, Martin Elmer** (1884–1937), American explorer whose expeditions with his wife the former Osa Leighty, carried him since their marriage in 1910 to the South Sea Islands, Australia, Borneo, Malaya, Ceylon, India, and Africa. In Africa the Johnsons carried on the work started by Carl Akeley, making a motion picture record of the vanishing wild life of that continent for the American Museum of Natural History during 1924–29. The last and most famous of their films was *Congorilla*, a study of life among the pygmies of the Belgian Congo. These adventures were further described in such books as *Cannibal Land* (1917), *Camera Trails through Africa* (1924), *Safari* (1928), and *Lion* (1929). Martin Johnson was born in Rockford, Ill., Oct. 9, 1884, and started his adventurous career in 1905 when he accompanied Jack London and his wife on the voyage of the "Snark" to the South Seas. He died in Los Angeles, Calif., Jan. 13, 1937, as a result of injuries sustained in the crash of a transport aeroplane.

**Johnson, Robert Underwood** (1853–1937), American poet, editor and diplomat, was born in Washington, D. C., Jan. 12, 1853. Soon after graduating from Earlham College in 1871, he became connected with the editorial staff of *Scribner's Monthly*, afterwards the *Century Magazine*, of which he became associate editor in 1882 and editor in 1909. During these years, he was prominent in the American Copyright League, of which he was secretary from 1882 until his death. He was also active in the conservation movement, playing a part in the creation of Yosemite Park and the institution of the White House Conservation Conferences during Theodore Roosevelt's administration. Known as an admirer of Italy, he served as ambassador there during 1920–21. He was secretary of the National Institute of Arts and Letters (1903–09), a founder of the American Academy of Arts and Letters (1903), and the director of the New York University Hall of Fame from 1911 to his death. Following publication of his first book of poems in 1891, he issued new volumes at regular intervals until the appearance of *Aftermath* in 1933. His death occurred in New York City, Oct. 14, 1937.

**Journal of American Medical Association:** see AMERICAN MEDICAL ASSOCIATION.

**Judaism:** see JEWISH RELIGIOUS LIFE.

**Jugoslavia:** see YUGOSLAVIA.

**Juliana**, H.R.H. Princess of the Netherlands and Lippe Biesterfeld (1909– ), was born at The Hague April 30, 1909, only child of Queen Wilhelmina and her Consort Henry, Duke of Mecklenburg (*d.* 1934). Brought up upon democratic lines, she was educated at the University of Leyden, and was from an early age popular throughout the country. In September 1936 she was betrothed to Prince Bernhard Leopold of Lippe Biesterfeld (born at Jena, June 29, 1911), son of Prince Bernhard Casimir (*d.* 1934). After travelling he joined the German chemical firm, I. G. Farbenindustries Aktiengesellschaft (Jan. 1, 1936), representing them in Paris and later at Amsterdam. The wedding took place at The Hague on Jan. 7, 1937. The Prince was created Prince of the Netherlands.

On Jan. 31, 1938, Princess Juliana gave birth to a daughter, Princess Beatrix Wilhelmina Armgard.

**Julius Rosenwald Fund:** see ROSENWALD FUND, THE JULIUS ROSENWALD FUND.

**Jumping:** see TRACK AND FIELD SPORTS.

**Junior Colleges:** see UNIVERSITIES AND COLLEGES.



Justice, Department of: see GOVERNMENT DEPARTMENTS AND BUREAUS.

**Jute.** Prices for jute in Calcutta touched the lowest point of 1937 in December, after a year during which the government had successfully maintained improved price levels. Production of Indian jute mills in the first 11 months of 1937 was 762,488,993yds. of hessian cloth, an increase of 109,365,905yds. over the corresponding period in 1936. The output of sacking by Indian mills for 11 months in 1937 was 1,326,570,742yds., a gain of 104,409yds. over 1936.

Reports from London give the average price level for 1937 as 20 ros. a ton for Firsts, compared to £18 7s. 6d. in 1936 and 18 ros. in 1935. An active market developed early in 1937 and in March 1 restrictions were removed on the number of working hours and the number of looms operated. In May the prices per ton for Firsts had advanced to £23 10s., but there was a sharp reaction and prices dropped to £19 5s., regaining a part of the loss and going to £21 17s. 6d. in July. Although succeeding fluctuations were in a narrow range the market touched £18 5s. in December. Negotiations were under way at the end of the year for a reduction of mill hours, a condition necessary to improved prices, was predicted. (S. O. R.)

**Juvenile Delinquency.** The trends in the U.S. in the field of treatment and prevention of youthful crime in 1937 continue to follow programs laid down at the White House Conference of 1934. Emphasis is on better statistical methods of reporting volume, on community efforts in prevention, on professional standards in the training of workers, on a more critical evaluation of methods, and on co-ordination of governmental and private agencies.

The press continues to write about the increasing lawlessness of youth. This is not borne out by what data are available. The Federal Children's Bureau is the most reliable source of the index of juvenile delinquency. Thirty-four courts in 18 States now report. There is variation in communities, but the downward trend of arrests of persons under 16 amounts approximately to 1% over a five-year period. The States reporting decrease in the number of delinquency cases disposed of by the courts are Alabama, California, Connecticut, District of Columbia, Georgia, Indiana, Iowa, Maryland, Massachusetts, Minnesota, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Utah, Virginia, and Wisconsin. Girls' cases dropped only 5%. Negro cases dropped 10%; white cases 7%.

During the first quarter of 1937, 2,166 city departments submitted crime reports to the Federal Bureau of Prisons, an increase of 55 cities on the first quarter of 1936, covering a population of 1,96,843. It is impossible to show the rates per 100,000 for age groups, since the entire population is not included and the number of each age group in the samples submitting reports is not known. Yet, it is noted that the decrease in arrests of boys between 16 and 21 is 13% over the preceding year. Males and females 19 years of age show the highest commitment rates. It is likely that the rising age commitment rate will continue.

Co-ordinating councils for prevention have been developed in California and elsewhere to unite the work of schools, courts, churches, clubs and social agencies. A significant development in psychiatry applied to group control of delinquency is the publication by the Commonwealth fund of Dr. Plant's ten year experiment in Essex county, New Jersey. The Progressive Education Association has devoted various meetings throughout the country to a discussion of behaviour problems. The American Youth Commission is undertaking an intensive study of juvenile delinquency. Dr. Henry B. Elkind, director of the Massachusetts

Society for Mental Hygiene has projected a method for the evaluation of juvenile courts and clinics. The training of professional workers and their employment has been described by the American Association of Social Workers. (M. V. W.)

**Great Britain.**—Although the number of juveniles charged with indictable offences has increased tremendously in recent years (from 11,247 in 1928 to 22,393 in 1935), it is pointed out, in the volume of criminal statistics issued by the Home Office in July 1937, that it is unsafe to assume that there has been a real increase in juvenile delinquency corresponding to the increase in the number of young persons charged and found guilty in the courts.

According to the latest criminal statistics, published in July 1937, boys and girls under the age of 17 formed 37% of the total number of persons charged with indictable offences. Eighty-three per cent were dealt with under the Probation of Offenders Act. Of these, 51% were bound over with the supervision of a probation officer, 8% were bound over without supervision, and 24% were dismissed after charge proved. The number sent to Home Office schools was 2,340, or 9%.

The districts in which the proportion of juvenile offenders placed under the supervision of a probation officer was substantially smaller than the average of 51% were few, the only notable exception being Carmarthen, which so dealt with only 16 out of 106 juvenile offenders. Of the large cities, those in which the proportion was comparatively low were Liverpool (28.6%) and Bristol (22.5%). On the other hand, in Birmingham the proportion was as high as 70.6%. Some of the towns in which the proportion was below the average are among the few which use birching as a method of dealing with juvenile cases.

The new Prison Reform bill (presented to Parliament in Feb. 1938) proposes a modification of the Borstal system of imprisonment for young offenders, by unifying sentences to a uniform three years—instead of the two- and three-year sentences now imposed. The power of release after six months, if the offenders show that they have benefited from treatment, will not be affected. (See also CRIME.) (VI. BR.)

**Kamerooks:** see CAMEROONS.

**Kansas,** a central State of the United States admitted Jan. 29, 1861, popularly known as the "Sunflower State"; area, 81,774 sq.mi.; population according to the U.S. census of 1930, 1,880,999. (State census of 1937, 1,823,629.) Capital, Topeka, 64,120. (State census of 1937, 75,117.) It is the third city in size, the largest being Kansas City, 121,857 (State census of 1937, 125,137), and Wichita, 111,110 (State census of 1937,

103,629). Of the State's population (1930) 729,834 were urban, or 38.8%; 66,344 were coloured; 1,723,131 were native-born white and 69,716 were foreign born.

**History.**—In the biennial election of 1936, Walter A. Huxman, a Democrat was elected governor, but Republican majorities were returned to both houses of the legislature. Other State

officials are W. M. Lindsay, Lieutenant Governor; Frank J. Ryan, Secretary of State; George Robb, Auditor; J. J. Rhodes, Treasurer; Clarence V.



WALTER A. HUXMAN, governor of Kansas



Beck, Attorney-General; W. T. Markham, Superintendent of Public Instruction; Charles F. Hobbs, Commissioner of Insurance. The leading legislation for the session of 1937 included soil conservation; an act regulating the relations between the State banking system and the Federal Deposit Insurance Corporation; a Social Welfare Act providing for co-operation with the Federal Social Security Act, and applying to old age assistance, to dependent children and to the blind, the system to be administered primarily by the county authorities; an act providing State aid to the weaker elementary schools; several acts relating to alcoholic liquor, one legalizing, for the first time since the adoption of the prohibitory amendment to the constitution in 1880, the sale of liquor containing not more than 3.2% of alcohol by weight and other acts providing for taxation and regulation of the liquor business. This legislature authorized for the first time a sales tax of 2% upon the sale of tangible personal property, the proceeds to be applied to the financing of the social welfare program and the State aid to the elementary schools.

**Education.**—The State has over 200 public libraries, of which over half are tax supported. There are twelve municipal and eight private junior colleges, sixteen private four-year colleges, and five State supported institutions of collegiate grade. Other State educational institutions are a vocational school and institutions for the blind and deaf. For the school year 1935–36, the last for which data are available, there were 6,777 one teacher district schools in operation with an enrolment in the eight elementary grades of 88,809. There were 1,000 two or more teacher districts (excluding cities of first and second class) with enrolments in the elementary grades of 85,308. The 88 cities of first and second classes had elementary enrolments of 120,065.

**Agriculture.**—According to the U.S. census of 1930, the four leading money crops of 1929 were wheat (50% of total crop value), corn (24.1%), hay (8%), and oats (3.2%). Winter wheat production for 1937 (U.S. Dept. of Agriculture estimates) was 158,040,000 bu. as compared with the five-year average (1928–32) of 177,054,000; corn 54,876,000 (five-year average 126,756,000); oats 35,075,000 (five-year average 34,515,000); tame hay 1,168,000 tons (five-year average 1,814,000). Winter wheat planted in the fall of 1937 was estimated at 17,500,000 ac., the largest on record and the third successive record-breaking planting, constituting 30% of the winter wheat acreage of the U.S. The U.S. census of Agriculture for 1935 credited Kansas with 3,386,179 cattle, 1,119,000 swine, 589,375 horses, and 15,140,543 chickens. All these figures, except for cattle, showed declines from the 1930 census.

**Manufactures.**—The leading manufactures, according to the U.S. census of 1935, were meat packing, flour, petroleum refining, railroad cars and equipment built in shops, butter, foundry and machine shop products, bakery products, cement, feeds, and printing with 1,508 establishments producing goods valued at \$468,690,290. The annual average of bituminous coal mined for 1926–30 was 3,215,000 tons. This represents a decline from 5,204,380 for 1919. The low point was reached in 1932 with 1,953,000 tons with the 1935 figure standing at 2,686,164 tons worth \$4,943,000. The major portion of the State's 1935 mineral output of \$96,905,947 was made up of petroleum (\$56,750,000) and natural gas (\$18,153,000). (J. C. MN.)

**Kazakh S. S. R.,** in area the second largest Republic of the U.S.S.R. (*q.v.*), stretches between the lower Volga and the Caspian sea in the west, China in the east, the R.S.F.S.R. in the north, and the Central Asiatic Soviet republics, Turkmenistan, Uzbekistan, and Kirghizistan in the south. The capital is Alma-Ata, and the national flag has a red ground, with a gold sickle and hammer and the name of the Republic in Kazakh

and Russian in the top left corner. Leading cities, with 1935 populations, are: Alma-Ata (formerly Verny), 197,400; Semipalatinsk, 136,400; and Karaganda, 118,900.

**Area and Population.**—Area: 2,744,000 sq.km. Population (1933); 6,797,000 (rural 5,626,000, urban 1,171,000), of whom Kazakhs form 57.1%, Russians 19.7%, and Ukrainians 13.2%. The main languages spoken are Kazakh, Russian, and Uzbek. In 1936–37, the total number of pupils was 930,000 in 7,903 schools; and there were 21 higher educational institutions, and 85 technical colleges.

**History.**—The adoption of a new Constitution by the 10th Extraordinary Soviet Congress in Alma-Ata on March 26, 1937, made Kazakhstan, formerly an autonomous Republic belonging to the R.S.F.S.R., an equal, independent Union Republic of the U.S.S.R. The Kazakhstan S.S.R. is divided administratively into 8 provinces.

Ninety-six per cent of the population took part in the elections to the Supreme Council of the U.S.S.R. on Dec. 12, 1937.

**Trade and Communications.**—Sown area (1936): 21,053 square miles. In 1937, 97.5% peasant households were collectivized. The chief agrarian products are grain, rice, cotton, and sugar beets; and cattle are bred. The natural resources include coal, oil, copper, lead, zinc, gold, and silver. The retail trade turnover (1936) was 2.3 milliard roubles, and the output of industry (1936—at prices 1926–27), 604 million roubles. There are three important railway lines: Semipalatinsk-Tashkent in the south-east; Petropavlovsk-Kounrad in Central Kazakhstan. Aktyubinsk-Tashkent in the west. The length of railways (1936) was 5,228 km.; and the freight carried, 18,356,000 tons.

(S. YAK.)

**Kellogg, Frank Billings** (1856–1937), former World Court judge and U.S. secretary of State, was best known for his part in securing adoption of the multilateral peace pact of 1928. His activity as Government prosecutor, U.S. Senator from Minnesota, ambassador to Great Britain and secretary of State are described in the *Encyclopædia Britannica*, vol. 13, p. 316. After retiring from the secretaryship in April 1929, he received the Nobel Peace Prize for 1929 and in 1930 was appointed as a judge on the Permanent Court of International Justice at The Hague where he served until his resignation in 1935. His death occurred in St. Paul, Minn., Dec. 21, 1937.

**Kellogg, Vernon Lyman** (1867–1937), American zoologist, was born at Emporia, Kan., Dec. 1, 1867. After four years on the staff of the University of Kansas, he became professor of entomology at Stanford University where he formed a close friendship with Herbert Hoover with whom he was associated during the World War. He remained in Pasadena until 1920 when he became permanent secretary of the National Research Council. He resigned from this post because of illness in 1931 and died Aug. 8, 1937, at Hartford, Conn. A brief account of his life and a list of his publications may be found in the *Encyclopædia Britannica*, vol. 13, p. 316.

**Kellogg-Briand Pact:** see NEUTRALITY: *Kellogg-Briand Pact*.

**Kentucky,** an east south central State of the United States, admitted June 1, 1792, popularly known as the "Blue Grass State," area 40,598 sq.mi.; population (U.S. census, 1930) 2,614,589; estimated (July 1, 1937) 2,920,000. Capital, Frankfort, 11,620; the largest city, Louisville, had 307,745 inhabitants (1930). Of the State's population, 799,026 were urban or 30.6%, 2,366,524 were white, 236,040 coloured, and only 21,841



foreign born.

**History.** — Normally Democratic in politics, Kentucky returned only one Republican to the national congress in 1936 and the State legislature of 100 members stands 77 to 23 on joint ballot. Chief officers: Governor Albert B. Chandler; Lt. Governor Keen Johnson; Attorney General H. M. Meredith; Education, H. W. Peters; Agriculture, G. K. Ferguson. A

drastic Reorganization Act of 1936 consolidated scores of administrative boards under three groups: Constitutional (seven), Statutory (ten), Independent Agencies (five). Under the last is a Legislative Council to prepare legislation for the General Assembly which meets biennially.

A great flood in the last week of Jan. 1937 filled the valley of the Ohio and its tributaries. Fifty-four counties sustained property damage of \$139,800,000 and 50 lives were lost. Severe losses occurred in Covington, California, Louisville and Paducah. The Kentucky river also inundated the obsolete State reformatory at Frankfort compelling the hasty transfer of 2,800 convicts to new buildings later provided at La Grange. A new asylum for the feeble minded is planned in Mercer county in a program of improvement of charities and correction.

Since 1933 the floating debt (constitutional debt limit \$500,000) has been reduced from \$26,000,000 to \$11,000,000, with indications of its elimination in 1939. The annual budget exceeds \$24,000,000, exclusive of \$15,000,000 annually administered by the Department of Highways. On Jan. 1, 1938, despite the prestige of distilleries, 43 counties had voted to exclude the sale of intoxicants by virtue of the State law of Feb. 25, 1936. Labour troubles were insignificant except for attempts of the United Mine Workers to organize the Harlan district. Federal juries investigated reports of intimidation and indicted certain persons.

**Education.**—Educational progress included the consolidation of weaker units both primary and secondary; abolishing graduate study in the four State teachers' colleges in favour of the university at Lexington. Illiteracy declined from 12.4% in 1920 to 8.6% in 1930.

**Agriculture, Manufactures, Mineral Production.**—Tobacco is the chief crop, yielding in 1935, 243,587,600lbs., marketed at \$22.50 per hundredweight. Corn from 238,000 farms yielded 62,084,000 bushels. The yield of both crops was somewhat less in 1936. The Kentucky race-horse, noted for speed and endurance, flourishes in the Blue Grass counties where large establishments are devoted to his care. The livestock census reported in 1935, 1,211,508 cattle; 1,034,991 swine; 240,196 mules; 1,079,655 sheep.

Manufacturing is located chiefly in the Ohio river cities, and in distilleries and mills widely scattered over the State. In 1935 the U.S. census returned 39 distilleries with 2,647 workers producing \$48,583,000 in value; 137 flour mills with 876 workers; 10 repair shops, 29 meat packing establishments, and 8 petroleum refineries,—each group averaging about \$16,000,000 in value of output.

Of the varied mineral resources, which include rock asphalt, sand, clays, and building stone, the chief commercial product was coal, whose reserves are estimated at 123,000,000,000 tons. In 1936 the coal industry employed 58,494 men, producing 47,694-



ALBERT B. CHANDLER, governor of Kentucky, and Mrs. Chandler

862 tons. Petroleum lifted was 5,506,281bbls.; and natural gas (estimated for 1937) 37 billion cubic feet. (E. T.)

**Kenya,** a British crown colony and protectorate in East Africa, bounded N. by the Anglo-Egyptian Sudan and Ethiopia, E. by Italian Somaliland, S.E. by the Indian ocean, S.W. by Tanganyika territory and Lake Victoria, and W. by Uganda. The governor is Air Marshal Sir H. R. M. Brooke-Popham, K.C.B., C.M.G., D.S.O., who succeeded Brig.-Gen. Sir Joseph Aloysius Byrne in April, 1937. The capital is Nairobi. Total area 224,960 sq.mi. (the protectorate is a small coastal strip at the mouth of the Tana, rented from the sultan of Zanzibar); pop. (est. 1935) 3,084,351, of whom Europeans numbered 17,997, Asiatics 39,898, and Arabs 12,599. The leading towns are Nairobi, Mombasa, and Kisumu. In 1936 16 missions had 1,397 elementary, 40 primary, and 2 secondary schools, with a total of 95,642 pupils. The Government had also 11 primary and 38 village schools, one native Industrial Training Depot, and one Jeanes school (mainly for teachers' practice), with a total of 4,520 pupils.

In April, 1937, a bill was passed imposing an income tax for the first time in the colony's history. Defence proposals put forward in October included the creation of a mine-sweeping unit and the equipment with new weapons of the King's African Rifles.

The total value of imports during 1936 was £7,377,279; exports of the territories were valued at £8,354,774, goods to the value of £3,888,321 originating in Kenya. The main products are sisal, tea, wheat, and coffee. Gold was the most important mineral, the output being valued at £269,947.

The radio telephone service to Great Britain was inaugurated in 1936 and later extended to the continent of Europe. Work has been begun on three new trunk telephone services, and three short trunk services have been opened. Funds have been obtained from the Colonial Development Fund for roads in mining areas, and work was begun in 1936. There is a twice-weekly air service by Imperial Airways to Kisumu and Nairobi. Currency is controlled by the East African Currency board in London; the unit being the shilling, subdivided into 100 cents. There is a native poll-tax. Revenue for 1936 was £3,496,389, and expenditure £3,350,381. Kenya has a native regiment, a battalion of the King's African Rifles, with regular British officers, and also an African police force.

**Kidnapping.** While the crime of kidnapping is not confined to the United States, the number of cases in recent years and the efforts of the State and Federal governments to prevent its continuance have attracted special attention to the American problem. Progress was made in apprehending kidnappers and increasing penalties during 1937, but several sensational abductions proved that much remained to be done.

The year began with world interest aroused by the search for the captor of Charles Mattson, ten-year-old son of a Tacoma, Wash., physician, who had been seized while playing under his Christmas tree. Efforts of the family to contact the kidnapper were unavailing, and when the battered body of the boy was found on Jan. 11, Federal investigators were free to undertake a relentless search for the killer. The year passed, however, without apprehension of the culprit.

The efficiency of the Federal Bureau of Investigation's work was fortunately not to be judged by the failure to locate the murderer of Charles Mattson. Indeed, it was during the search that J. Edgar Hoover, head of the bureau, reported that 65 cases of kidnapping and kidnap plots had been solved since the Federal kidnapping law of June 22, 1932 had provided for national participation. In four years, 158 convictions had been obtained (four death sentences, 31 for life and the remainder for a total of



2,114 years) and three notorious cases of 1935-36 (the kidnappings of George Weyerhaeuser, Mrs. B. V. Stoll and Edward Bremer) had been solved with convictions.

While no other case of 1937 matched the grimness of the Mattson kidnapping, Federal authorities had to deal with several other instances of abduction. In early February the kidnapper of Dr. J. C. Davis of Willow Springs, Mo., was apprehended soon after he had lured the 67-year-old country physician to his death by a false call for medical aid. In June Mrs. William H. Parsons disappeared from her Long Island home; and although a ransom note was found, the mystery remained unsolved. Dr. James I. Seder, 79-year-old West Virginian, died of exhaustion in November after escaping from his captors who were quickly arrested and convicted; while in December an Indiana baby and nurse were released by frightened kidnappers after being seized.

Another 1937 case was solved in Jan. 1938, when John Seadlund was seized at the Santa Anita race track betting ransom money received from the family of Charles S. Ross, Chicago merchant who had been kidnapped in September. Seadlund's confession that he had killed both Ross and a confederate marked the climax of painstaking Federal investigation.

Federal action against kidnapping was supplemented by State action. The legislation most frequently suggested was a compulsory death penalty which was discussed in Pennsylvania, Georgia, New Hampshire, Connecticut, Rhode Island and Colorado. A different approach was the prohibition of ransom payments urged by Senator Ashurst of Arizona and debated in the States of Massachusetts and Washington. The danger of mandatory death penalties was made clear by the frequent instances of children seized by divorced parents or love-starved women. Firm action in all cases, however, seemed the only way of discouraging kidnapping attempts.

Outside of the United States the leading kidnapping case of 1937 was the abduction and murder of two-year Eugenio Pereyra Iraola, son of an Argentine cattle rancher, in late February. His confessed kidnapper committed suicide soon after capture. Elsewhere seven Canadians were released after pleading guilty to seizing an employer and transporting him to the United States border and French authorities were urged to investigate the disappearance of General Eugene Miller who disappeared in August leaving a note saying he feared abduction.

**Kiel Canal.** As a further step in the renunciation of the provisions of the Treaty of Versailles for the international regulation of inland waterways, Germany, on Jan. 16, 1937, resumed full sovereignty of the Kiel canal. According to the new regulations published by the Naval High Command, the passage of the warships and naval craft of foreign Powers through the canal is permissible only with authorization obtained beforehand through diplomatic channels.

Plans have also been announced for boring a tunnel 1½ mi. long and 10 ft. wide, under the canal, to take a new Reich motor road from Hamburg to Flushing on the Danish-German frontier.

**Kieselguhr:** see DIATOMITE.

**King, William Lyon Mackenzie** (1874- ), Canadian statesman, was born at Berlin—now Kitchener—Ontario, Dec. 17, 1874, the son of John King and Isabel Grace, daughter of William Lyon Mackenzie, M.P., who had been prominent in the struggle for political freedom in 1837. Mr. King entered Parliament in 1908, became leader of the Federal Liberal party in 1919 and has continued as leader since. He resumed office as Prime Minister for the third time, Oct. 23, 1935.

On March 5, 1937, Mr. King made a friendly visit to President Roosevelt at the White House, Washington. He headed the Canadian delegation to the coronation of King George VI, and Queen Elizabeth, May 12. At the opening of the Imperial Conference at London on May 14, Mr. King declared himself in favour of peace and freer trade. After the Imperial Conference ended on June 15 he visited Aberdeen, Scotland and later officiated at the inauguration of Canada's World's Fair Pavilion, Paris, June 23. On a journey to Germany, Mr. King met Chancellor Hitler on June 29, and on July 1, King Leopold of Belgium.

As Prime Minister of Canada he announced that his government would join in the parley on the Nine-Power treaty of 1922 with respect to the situation in the Far East; that any expenditures on armaments were for the defense of Canada and not for defense of the British Empire; and on Nov. 18, that negotiations would be opened for a revised Canadian-United States reciprocal trade pact in the light of the proposed new Anglo-American trade agreement. (J. T. C.)

**Kingsley Dam:** see DAMS.

**Kirghiz S. S. R.,** a Central Asiatic Soviet republic, a member of the U.S.S.R. (*q.v.*) bordering on the republics of Kazakhstan, Uzbekistan, and Tajikistan, and in the east on China. The capital is Frunze (formerly Pishpek), and the national flag has a red ground, with the name of the republic in Kirghiz and Russian in gold in top left corner. Leading cities, with 1936 populations, are: Frunze, 86,300; and Kizil-Kiya, 13,500.

**Area and Population.**—Area: 197,000 sq.km. Population (1933): 1,302,000 (rural 1,100,000; urban 202,000), of whom 66.6% were Kirghiz, 11.7% Russians, and 11% Uzbeks. The chief languages spoken are Kirghiz, Russian, and Uzbek. In 1936-37, the total number of school children was 227,000, and there were 1,600 elementary schools, 167 secondary schools, three higher educational institutions, and 14 technical colleges.

**History.**—The adoption of the new Kirghiz constitution by the Fifth Extraordinary Soviet Congress in Frunze on March 23 brought to the formerly politically and economically backward republic an important change in its status in the Soviet Union. Until 1924 a part of Kazakhstan, and later an autonomous republic of the R.S.F.S.R., Kirghizstan now takes the position of an equal independent Union Republic of the U.S.S.R. It includes 45 districts, five towns, and three workers' settlements. Ninety-four per cent of the population took part in the elections to the Supreme Council of the U.S.S.R.

**Trade and Communications.**—Sown area (1936): 3,837 sq.mi. In 1937, 89.1% peasant households were collectivized. The chief agricultural products are grain (chiefly wheat), cotton, tobacco, sugar-beet, and poppy; and there is important stock-breeding. The natural resources include coal, gold, non-ferrous metals, radium, sulphur, oil, mercury, and water-power. The retail trade turnover (1936) was 0.5 milliard roubles. The output of industry (1936, at prices 1926-27) was 114 million roubles. There is a lack of railways and other means of transport, the length of railways (1936) being only 162 km. (S. YAK.)

**Kiwanis International.** Combined membership in the 1,936 Kiwanis clubs in as many communities in the U.S. and Canada was approximately 97,000. Membership is limited to two men from any one business or profession or from agriculture in any one community. The headquarters of the organization are Kiwanis International, 520 North Michigan avenue, Chicago, Ill. The international officers for the 1937-38 term are: president, F. Trafford Taylor, K.C.,



**Knitwear:** *see* TEXTILE INDUSTRY.

**Agriculture, Manufactures, Minerals.**—Korea is overwhelmingly an agricultural country and over 80% of its population is

**Ku Klux Klan.** The hooded brotherhood organized by Southern whites in 1866 as an influence against negroes after the Civil War was revived by Walter Joseph Simmons on Thanksgiving Day 1915 as an "invisible empire" of 100 per cent Americans determined to apply extra-legal pressure not only upon the coloured population but upon Jews and Roman Catholics. On Stone mountain, Atlanta, Ga., the fiery cross was rekindled. For some years, the activities of the 20th century Klan were spectacular and provocative of controversy, instances of violence and intimidation being described in the press. The alleged membership of the Klan during post-war hysteria was



said to run into large figures. It did not prevent, however, the nomination of Alfred E. Smith, a Roman Catholic, as Democratic candidate, in 1928, nor the election of Herbert H. Lehman, a Jew, five times elected Governor of New York State. Feeling was aroused, however, when in 1937, President Roosevelt appointed Senator Hugo L. Black of Alabama as Associate Justice of the Supreme Court. After the approval of the appointment by the Senate, it was stated that the new Justice was or had been a Klansman. Early in October, Mr. Black's published statement was, "I joined the Ku Klux Klan about 15 years ago." Later he resigned and never rejoined. With regard to an unsolicited card of membership given to him shortly after his election to the Senate, he said, "I never used it. I did not even keep it." Applications to exclude Justice Black from the Supreme Court on constitutional grounds failed. (See also SUPREME COURT OF THE UNITED STATES.)

**Kuomintang.** The Kuomintang (National People's Party), the ruling party in China, came into existence on Aug. 23, 1912, in the year after the establishment of the Chinese republic. It was founded as an open political party and grew out of the secret nationalist revolutionary organizations which had been working for the overthrow of the Imperial régime. Its outstanding leader was Dr. Sun Yat-sen, whose so-called Three Principles have constituted the political creed of the Kuomintang both during Sun Yat-sen's life and after his death in 1924. These Principles were Nationalism, Democracy and People's Livelihood, the last of the three being the vaguest as to definition. Without committing the party to dogmatic socialism, it apparently calls for a certain amount of State planning for popular welfare. Democracy, in Sun Yat-sen's conception, was to be introduced in China not immediately, but after two preliminary stages, a period of military rule, when reactionary elements would be eradicated, and a period of "tutelage," during which the masses of the people would be educated to a point where they could effectively carry on a democratic form of government.

On Jan. 26, 1923, Dr. Sun Yat-sen and Adolf Joffe, Soviet special envoy in China, jointly announced the conclusion of an agreement, according to which Russia would support China "in achieving unification and attaining full national independence." The joint statement declared that conditions for the successful establishment of communism or sovietism do not exist in China. The Kuomintang became the sole ruling party in China after the northward campaigns of the nationalist forces, starting from Canton, in 1926, 1927 and 1928.

During this period the alliance with the Communists was smashed and the latter were outlawed. The Kuomintang has been criticized on two grounds; exclusion of non-members from responsible posts in the State service and loss of revolutionary vitality after the sharp swing to the Right in 1927. As Chiang Kai-shek (*q.v.*) has emerged more and more definitely as China's national leader the first criticism has tended to lose validity, as Chiang displayed considerable independence in making appointments regardless of party affiliation.

Plans for a national constitutional convention, which might have broadened the basis of government in China, have been indefinitely postponed because of the hostilities with Japan. The fate of the Kuomintang seems to depend largely on the issue of these hostilities, as Japanese Army leaders have been bitterly opposed to the Kuomintang and suppress it wherever they acquire control. (See also CHINA.)

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**Kurdistan:** see TURKEY.

**Kuwait:** see ARABIA.

## Kylsant, Owen Cosby Philipps,

1ST BARON of Carmarthen, (1863–

1937), G.C.M.G., British ship-owner; born March 25. In 1902 he was appointed chairman of the Royal Mail Steam Packet Company, around which the Kylsant group of shipping lines became centred. (For an account of this group, see *Encyclopædia Britannica*, vol. 20, p. 559, *s.v.* SHIPPING LINES AND GROUPS.) Lord Kylsant's connection with shipping ended unfortunately in a sentence of 12 months' imprisonment for circulating a false prospectus, but he was the victim of circumstances and the slump, and his personal reputation suffered little. He had been M.P. for Pembroke and Haverfordwest, 1906–10, as a Liberal, and for Chester, 1916–18 and 1918–20, as a Unionist. He was created a G.C.M.G. in 1918, and in 1923 was raised to the peerage. In 1902 he married Mai Morris, C.B.E., and is survived by her and three daughters. The peerage became extinct at his death. He died June 5, 1937.

**Labor, Department of:** see GOVERNMENT DEPARTMENTS AND BUREAUS.

**Labour.** Over the world as a whole the level of production and employment continued to advance rapidly during the



**BOMBS,** concealed in parcels and sent to two French employers' associations, wrecked this building and killed two policemen in Paris, Sept. 11, 1937



# ABOUT

greater part of 1937. In every important country the numbers of workers recorded as employed were substantially higher in 1937 than they had been in the corresponding months of 1936, though in many countries they were still considerably below the numbers employed in 1929, before the beginning of the world slump. The relevant figures for a number of countries are given in the accompanying table, which, taking 1929 as its base, represents the volume of employment by means of an index number. The average for the year 1932 is given in order to show the fall in employment during the world slump; and figures are added for the latest available month in 1937 and for the same month in 1935 and 1936, in order to show the extent of recovery as apart from seasonal fluctuations.

Of course, the increase in employment does not involve a corresponding decrease in the numbers unemployed, as population has increased, and in most countries the occupied population has risen somewhat faster during the past few years than the population as a whole. But the International index of unemployment (1929=100) compiled by the International Labour Office, which stood at 291 in 1932, had fallen to 95 in June, 1937, or actually below the 1929 level. This is slightly misleading, as the 1937 figure has not been adjusted for seasonal variation. In June, 1936 the corresponding index figure was 137, but the adjustment raised it to 151. The adjusted figure for June, 1937 should be about 105—rather above the pre-slump level.

In the latter part of 1937 a recession began to develop in the United States, partly on account of the Government's retrenchments in public expenditure and partly on account of the dislike of big business for President Roosevelt's policies. The American index of industrial production (1923-25=100) fell from 122 in May to 109 in September 1937, and that of factory payrolls from 105 to 100. The recession in the United States reacted on stock exchange conditions and on investment in Great Britain, and the level of unemployment rose in the autumn and early winter, the rise being spread over most industries except those affected by the rearmament program. The decline in employment, however, was not large; and in general the demand for labour remained high, though on account of the persistence of bad conditions in the depressed mining and textile areas, registered unemployment was at about 1,500,000 in November 1937. In October the percentage unemployed in different regions ranged from 21% in Wales and



PICKETS BREAKING WINDOWS in an automobile plant during a strike in Flint, Michigan

16% in the Northern region to 7% in the Midlands, 6½% in the South-east and 6% in London. The great activity in the heavy industries in connection with rearmament had, however, considerably decreased unemployment on the Clyde and in the North-east and South Wales as compared with a year earlier.

Among the outstanding causes of the world recovery in employment, the following seem to be the most important; the improvement of conditions in the United States—itsself largely due to the restoration of purchasing power through the outpouring of Government money under the New Deal; the bettered purchasing power of the primary producing countries owing to the higher prices of foodstuffs and materials—itsself influenced by the increase in American demand as well as by harvest conditions and the stimulus given by rearmament; the intensive rearmament in most of the European countries and in Japan; and the great impetus given to gold production and to the purchasing power of the gold-producing countries, especially South Africa and the Soviet Union, by the high price of gold. To these must of course

Employment  
(1929 average=100)

	Average of 1932	Corresponding month of			Month
		1935	1936	1937	
Great Britain (insured workers)	92	102	108	113	Sept.
U.S. (Manufactures only)	63	80	91	97	Sept.
France (1930=100)	81	75	75	81	Sept.
Germany (sickness insurance returns)	71	95	102	100	Sept.
Italy	78	98	94	106	June
Japan	82	111	116	129	June
Poland	64	75	83	94	Sept.
Czechoslovakia	83	82	89	96	Sept.
Switzerland	76	70	70	80	Sept.
Holland	79	75	73	82	Sept.
Belgium	78	82	88	90	Aug.
Canada	72	89	92	105	Sept.
South Africa	87	115	125	131	July
International Index of Unemployment					
adjusted for seasonal variation	291	194	151	..	June
Unadjusted for seasonal variation	291	181	137	95	June



CHICAGO POLICE break a window to enter a factory and end a sit-down strike by evicting the strikers





THE BRITISH TRADES UNIONS, representing 4,000,000 workers, hold their annual Congress in St. Andrew's Hall, Norwich, Sept. 6 to 10, 1937

be added the impulse to build up depleted stocks of commodities at all stages of production and to put arrears of maintenance and construction in hand during the early phases of an expansionist movement; and also—a factor of very great importance—the readiness of Governments and central banks to keep the supplies of credit abundant and prevent interest rates from rising as a consequence of expanding demand.

Thus, United States imports, which had fallen from a monthly average of \$362,000,000 in 1929 to one of \$110,000,000 in 1932, rose to \$296,000,000 in March 1937. Then came a decline; but imports were still at \$234,000,000 in September of 1937, as compared with \$218,000,000 a year before, and \$169,000,000 in Sept. 1935. The American index of prices of primary products (Sept. 1931=100) rose from 84 in July 1932 to 200 in March 1937. Thereafter, it fell sharply to 139 at the end of November; but there had not been time by the end of the year for this fall to react seriously on the purchasing power of the primary producing countries, which had ample liquid funds in hand.

British prices of primary products fluctuated less, the indices for the corresponding dates being 102, 182, and 145. But it was obvious, by the end of 1937, that the American recession could not continue for long without serious repercussions on the

rest of the world, even if these repercussions took some time to become manifest.

In Great Britain especially the level of economic activity in 1937 was influenced by the coincidence of rearmament activity with the continued boom in building. This boom, based mainly on low interest rates, reached its peak in the middle of 1937 when the index for building activity as a whole (1929=100) reached 210, and for industrial buildings only 241. Thereafter activity fell off; but it was still at 156, for building as a whole in July 1937, after which there was some further decline, but not very much beyond the normal seasonal variation. It was, however, regarded as certain that house-building would fall no further, in the absence of a new Government housing scheme on a large scale; for the demand for houses of the types which private enterprise was prepared to erect without subsidy was nearing saturation point in many areas. Flat-building, however, still remained active, and so did industrial building in connection with rearmament and the building of garages, cinemas, and other amenities in the newer residential districts. Nor was it certain whether the factory-building phase of rearmament had yet reached its peak. In general, building activity was expected to fall, but not precipitately, during 1938.

Over the entire period from 1929 to 1937, the most important single factor in employing additional labour in Great Britain has been the growth of the distributive trades. If 1923 is taken as 100, the index for the number of workers in these trades rose to 136 in 1929 and to 162 in 1932. After 1932 the increase became small. The index was 163 in 1935, 166 in 1936, and 167 in 1937 (July). The rapid advance of these trades has been largely due to the movement of population to new districts, as a result of the migration of industry and of rehousing in suburban areas—new shops being opened much faster than old ones have been closed. But this expansion seems now to be reaching its limit; and this has an important bearing on the future level of employment. Between 1923 and 1937 the distributive trades absorbed 807,000 additional workers, whereas all manufacturing industries taken together absorbed only 485,000.

Over the same period, building and public works construction absorbed 485,000, transport 119,000, and the "services", including public utilities, Government and commerce, 560,000. Mining reduced its personnel by 374,000; and there was a contraction of 437,000 in the relatively depressed textile and metal industries (which are also included above in the manufacturing group). The total increase for all insured occupations was 2,211,000.

Thus in Great Britain the occupational distribution of the employed population has been changing rapidly in recent years. In 1923 manufactures employed 51% of the insured workers, in 1937 only 47%. Mines and quarries accounted for 11½% in 1923 and only 7% in 1937. On the other hand, transport and distribution rose from 18% to nearly 22%, and building and public works from 7 to nearly 10. Services, apart from transport and distribution, rose from 12 to 14%. Agriculture, which is not included in these figures, underwent a continuous decline in the number employed, despite the protective measures applied to it during the slump.

These occupational changes connote a considerable increase in the proportion of black-coated workers. Moreover, within the group of manufacturing industries, there has been a big shift from old to new trades; and this has usually meant a decrease in the proportion of heavy to light industries, and of skilled to less-skilled workers. The largest increases have occurred in the finishing trades serving the consumers' market and in the electrical equipment trades as a result of the construction of the "grid." In 1937 this movement of labour into the lighter trades was to some extent reversed by the activity of the metal and heavy engineering



ing trades as a consequence of rearmament; but the rapid development of mechanization in the steel industry prevented the growth of output from causing any large increase in the demand for labour. Heavy engineering, being less susceptible to mechanization, did make considerably greater demands for skilled workers.

In general, the shift to new industries and to less skilled types of labour has been unfavourable to the growth of trade unionism, which has hitherto had its chief strength in the industries using a high proportion of skilled workers. In Great Britain, trade union membership fell from about 5,000,000 in 1927, after the general strike, to 4,389,000 in 1933. There was then some advance as industry gradually recovered from the slump; and total membership rose to 4,842,000 at the end of 1935. By the end of 1937, it was probably about 5,500,000—approximately the same as in 1925, but considerably less as a percentage of the occupied population. A beginning has been made in organizing the workers in the newer mass-production industries; but these workers, who include a high proportion of women and move fairly easily from one industry to another, are not easy to organize, as they have not the same continuous interest in conditions in one particular occupation as the skilled workers in the older trades.

In the United States, however, a determined attempt was being made in 1937, to unionize the workers in the mass-production industries—steel, automobiles, rubber, chemicals, etc. American trade unionism, under the control of the American Federation of Labor, has hitherto been organized for the most part strictly on a craft union basis, and has failed to enrol the workers in these industries, who have either remained unorganized, or been enrolled in “company unions” under the auspices of the big firms. In 1936, certain big unions belonging to the A.F. of L., headed by the United Mine Workers and the Amalgamated Clothing Workers, formed the Committee for Industrial Organization, and set out to organize the mass-production industries on industrial union lines. This led to a split, the A.F. of L. finally expelling from membership the unions which adhered to the C.I.O. The C.I.O., favoured by the New Deal legislation against company unionism, forged ahead rapidly, under the leadership of John L. Lewis of the mine workers; and important victories, including recognition of the C.I.O. unions as well as wage advances, were won, especially in the steel and automobile industries. By the end of 1937, the C.I.O. had gone a long way towards destroying company unionism, and its membership exceeded that of the unions which remained faithful to the A.F. of L. Many big employers, however, were waiting for a chance to hit back, and the stability of the C.I.O. unions was still uncertain. In face of the common danger and opportunity, attempts were being made late in 1937 to achieve a reconciliation between the two wings of the American trade union movement, but without much hope of success. (See also AMERICAN FEDERATION OF LABOR; COMMITTEE FOR INDUSTRIAL ORGANIZATION; SIT-DOWN STRIKES; STRIKES AND LOCK-OUTS; UNITED STATES: *Labour*.)

In France, as a sequel to the formation and election victory of the *Front Populaire* and to the fusion of the two rival Trade Union Federations in 1936, there has been an even more remarkable growth of trade union strength. In March 1936, the *Confédération Générale du Travail* (the French Trades Union Congress) had about 1,300,000 members. A year later its affiliated membership had risen to more than 5,000,000. Membership rose in the building and woodworking trades from 65,000 to 540,000, in the metal trades from 50,000 to 775,000, and in the food and drink trades from 15,000 to 300,000. Among textile workers it increased from 47,000 to 300,000, and among clerks and shop assistants from 1,500 to 285,000. These immense increases were the outcome of the great spontaneous movement, among organized and unorganized workers alike, for the 40-hour week and the full

recognition of the rights of collective bargaining. As a consequence the 40-hour week was introduced in most of the major industries in 1936, or the early part of 1937, and trade union recognition was conceded in the great majority of trades and establishments. Up to the end of 1937, these concessions had been for the most part successfully held, despite the replacement of a predominantly Socialist Government by that of M. Chautemps, which was predominantly Radical. The employers argued that the high costs involved were hampering economic recovery; but after a difficult period in the early part of 1937, the French index of employment began at last to move slowly upward.

In the Fascist countries trade unionism remains in any real sense non-existent; for both the Fascist trade unions in Italy and the German “Labour Front” are rather means of disciplining labour in the service of the totalitarian state than of enabling the workers to express their grievances or to establish any control over the conditions of employment. The strength of trade unionism is concentrated in the democratic countries. Late in 1937, an attempt was being made to unite for anti-Fascist action the two rival trade union Internationals—the International Federation

Trade Unionism in 1936  
(Membership in thousands)

	I.F.T.U. or of kindred type	Com- munist or of kindred type	Chris- tian	Miscel- laneous	Fascist or Corpor- ative
U.S. . . . .	3,422†	..	..	?	..
Great Britain . . . .	3,615	..	..	1,500	..
France . . . . .	1,300*	310	158	?	..
Belgium . . . . .	505	..	297	72	..
Holland . . . . .	287	..	336	67	..
Denmark . . . . .	381	..	..	54	..
Sweden . . . . .	701	..	..	86	..
Norway . . . . .	215	..	..	6	..
Poland . . . . .	289	..	247	294	..
U.S.S.R. . . . .	..	20,260	..	..	..
Switzerland . . . . .	297	..	53	65	..
Germany . . . . .	..	..	..	..	?
Austria . . . . .	..	..	160	..	338
Italy . . . . .	..	..	..	..	4,851
Spain . . . . .	1,627	?	?	?	..
Argentina . . . . .	250	..	15	24	..
Mexico . . . . .	53	..	..	946	..
Canada . . . . .	167	..	38	21	..
Australia . . . . .	600	..	..	287	..
New Zealand . . . . .	63	..	..	..	..
India . . . . .	189	..	..	?	..
Japan . . . . .	264	..	..	144	..

\*Over 5 millions in 1937.

†Not including the new unions organized under the C.I.O.

of Trade Unions, based chiefly on the British, French, American, and Scandinavian unions, and the Red International of Labour Unions, which is based on the Russian movement. The accompanying table sets out the strength and affiliations of the trade union movement in the leading countries as it was in 1936—figures for 1937 not being yet available. The table includes, where figures are available, unions of other types, such as the Christian unions which exist in many Continental countries, and organizations of black-coated workers or others unconnected with the national trade union centres.

(G. D. H. C.)

**Labour Arbitration.** The outstanding development in industrial arbitration in the United States during 1937 was the validation by the Supreme Court on April 12 of the National Labor Relations Act—the so-called Wagner Act of 1935. Aiming to promote collective bargaining as a means of preventing strikes affecting inter-State commerce, the law prohibits defined practices as managerial interference with employees' rights to choose representatives for collective bargain-



ing. A board of three, administering the act, is empowered to determine and certify those representatives under the principle of majority rule. Thus this law seeks peaceful settlement of that issue—union recognition and collective bargaining—responsible for both a growing proportion and the most violent of industrial conflicts, and peculiarly unsuceptible to traditional methods of arbitration.

The real test of its efficacy, however, is only now under way. For in the two and one-half months immediately following the Supreme Court decision, the board received more complaints than in the 18 months preceding.

To Dec. 1, 1937, a total of 10,568 cases, involving 2,848,166 workers, were handled, of which 7,076, or almost two-thirds had been closed. Of these 7,076 cases, 4,127, or 58.3%, were closed by agreement of both parties; 1,031, or 14.6%, were dismissed; and 1,538, or 21.7%, were withdrawn. Only 380 cases, or 5.3%, were closed by other procedures, including the compulsions authorized by the act. Although the act does not expressly authorize mediation, the great majority of cases were thus settled actually "out of court," by quasi-mediatory procedure. The board apparently realized that settlements achieved by consent promised far smoother industrial relations than decisions enforced from without.

**United States Department of Labor.**—The Wagner Act is restricted to the single issue of employee representation for collective bargaining in disputes affecting inter-State commerce. Obviously it needs supplementation. The conciliation service of the Federal Department of Labor, established in 1913, intervened during the fiscal year 1937 in 1,267 industrial disputes, involving 1,383,588 workers, or nearly one-third of the year's total of 3,619 strikes. Adjustments were obtained in 1,016 cases. Inadequate to the full potentialities of such a service, the strengthening of this Federal agency is one of the important present needs.

**State Legislation.**—For intra-State industry nine States enacted legislation during the year to protect labour's rights to organize and bargain collectively, and to strengthen conciliation services. Five States—Massachusetts, New York, Pennsylvania, Utah and Wisconsin—passed "Baby Wagner Acts," modelled, with some deviations, on the Federal law. Thus Massachusetts prohibits "sit-down" strikes, New York and Wisconsin prohibit industrial espionage and the circulation of blacklists, and Pennsylvania excludes labour organizations which deny membership because of race, creed, or colour. Wisconsin also authorizes its board to conciliate or arbitrate industrial disputes, to consider complaints concerning violations of agreements, and to register labour organizations. In addition, panels of employers and union representatives are established, each to consider unethical practices and breaches of agreement rising respectively from its own group. Four States—Connecticut, South Carolina, Pennsylvania, and New York—strengthened their laws for mediation and arbitration through other agencies.

**Railway Industry.**—The Railway Labor Act of 1934 represents the culmination of a long experience with orderly labour relations, and of experimentation with various forms of government intervention in an industry in which continuous service is an obvious public necessity. Collective bargaining between the carriers and unions designated by the majority of a craft or class of employees, constitutes the foundation. A National Railroad Adjustment Board composed of representatives of both sides handles grievances arising under existing agreements. A National Mediation Board of three members handles representation cases; intervenes in deadlocks over the negotiation of new contracts concerning wages, rules, or conditions; seeks to persuade the parties to accept voluntary arbitration when its mediation fails; and, as a final recourse, reports to the President the existence of emergen-

cies threatening substantial interruptions of service, in which event an emergency board appointed by him reports within 30 days. Strike action must be postponed for 30 days after the report.

During the fiscal year 1937, the mediation board disposed of 101 representation cases and 158 disputes arising from the negotiation of contracts. The adjustment board disposed of 1,443 cases involving grievances under existing agreements. Three emergency boards achieved settlements. Against the background of general turbulence in industry, and of economic difficulty confronting the railroads, this constituted an impressive record of orderly relationships. Nevertheless two strikes and two minor stoppages occurred. The most serious of these, a strike on the Louisiana and Arkansas Railway System, occurred only after the procedure under the act had been exhausted. After nine weeks, the government of Louisiana intervened, and, assisted by an agent of the mediation board, persuaded the company to accept decisions reached through the machinery of the act.

**Intervention.**—The year brought some notable instances of intervention by prominent officials. Outstanding was that by the governor of Michigan, assisted by conciliators from the Federal Department of Labor, whose unremitting efforts from the beginning of the automobile strikes, promoted agreements—one between the General Motors Corporation; and the other between the Chrysler Company, on the one hand, and the United Automobile Workers of America, on the other—recognizing the union as the collective bargaining agency for its own members. Intervention in the "little steel" strikes, however, proved unavailing against the relative ineffectiveness of the strikes and the antagonistic union attitude of the companies involved. Collective agreements were sought similar to that signed with the U.S. Steel Corporation. But neither the Federal conciliation service, nor the special mediation board of three members appointed by the President on July 17, nor the supporting efforts of the governors of the States involved, were able to bring the two sides into joint conference. The strike was regarded as a defeat for labour; cases involving such issues are now before the National Labor Relations Board.

Thus the year 1937 turned a dramatic page in the continuing effort to promote orderly labour relations in industry through Government intervention. The years ahead project the real test of present machinery in the United States for that end—machinery embodying experiments with legal protections to organize collective bargaining, as well as the more traditional procedures of mediation, conciliation and arbitration. These methods received their trial amid some of the most significant developments in history—changing Government policy toward labour and business; huge unionization campaigns in mass-production industries, and the internecine struggle within the ranks of labour itself. Difficult as it is already, the task of all arbitration machinery, Federal and State, has been rendered much more complicated by the split between the American Federation of Labor and the Committee for Industrial Organization, and the competition among all unions for whatever their affiliation, for membership and the right to represent labour. (See also LABOUR UNIONS; UNITED STATES: Labour)

(B. M. S.)

**Great Britain.**—Although there were more industrial disputes in Great Britain than in any year since 1920, the smoothness with which adjustments in working conditions were generally made affords further evidence of the effectiveness of the various forms of joint machinery, and of the resolve of the organizations of employers and workpeople to use constitutional methods of settlement. One of the most spectacular disputes of the year was that of the London busmen in May. This was settled through the intervention of the conciliation department of the Ministry of Labour and the men returned to work without the concession of the principal demand, but with considerable over-hauling of the



schedule duties. Many stoppages of work which occurred throughout the year were of an unofficial nature; that is, the men ceased work without or against the advice of officials of their unions. (See LABOUR UNIONS: *Great Britain and Europe*.) (VI. BR.)

**Labour Legislation.** Important as 1937 was in the enactment of new labour legislation in the United States, the year was still more significant for decisions of the highest court upholding existing labour laws. These court opinions upon minimum wage, collective bargaining, prison labour, and old age and unemployment insurance, not only determined decisively the validity of legal intervention which had long been held in question, but also by their liberality opened the way for further extensions of State and national protection. The new labour laws of this year therefore acquire additional interest and significance.

Among the many important labour laws enacted during 1937, the most notable relate to labour relations, minimum wages, hours, child labour, industrial health and safety, social insurance, and labour law administration. Labour relations acts patterned after the Federal law and outlawing specified unfair labour practices, with State boards for enforcement, were adopted in Massachusetts, New York, Pennsylvania, Utah, and Wisconsin. Mediation and conciliation laws were strengthened in New York, Connecticut, Pennsylvania, South Carolina, and Wisconsin. Elimination of abuses involved in the use of industrial police, deputized sheriffs, strikebreakers, or detective agencies was sought in laws enacted by Illinois, Massachusetts, Pennsylvania, and Utah. Pennsylvania and Wyoming further restricted labour injunctions. Massachusetts, Tennessee and Vermont enacted laws against sit-down strikes. Utah required all labour organizations to register with the State industrial commission.

Minimum wage laws were enacted for the first time by Nevada, Oklahoma, and Pennsylvania; and Arizona and New York re-enacted such laws following the Supreme Court's favourable decision on the Washington law. The Nevada act is a flat-rate law, and the Oklahoma law covers both men and women. Strengthening amendments to minimum wage laws were adopted in Colorado, Connecticut, Minnesota, and Wisconsin. By the end of 1937, minimum wage laws existed in 22 States and the District of Columbia. In hours legislation, Pennsylvania led by enacting an 8-hour day, 44-hour week covering men as well as women and children, with certain exemptions. North Carolina fixed a 10-hour day, 40-hour week for men and a 9-hour day, 48-hour week for women and minors. Washington limited to 60 the hours of domestic employees. An 8-hour day, 48-hour week limit was fixed for women in Connecticut (mercantile), Ohio (45-hour week in manufacturing), Illinois, and Nevada. Hour limits for women were also lowered in New Hampshire, North Carolina, and Vermont, and extended in coverage in Arkansas, New York, and North Dakota. Night-work for women was prohibited in Wyoming. The coverage of one-day-of-rest-in-seven laws was broadened in Illinois, New York, and Pennsylvania.

The child labour amendment to the Federal Constitution was ratified in 1937 by Kansas, Kentucky, Nevada, and New Mexico. The Kentucky ratification, however, was invalidated by that State's highest court in October. In all, 27 States (not including Kentucky) had ratified this amendment by the end of 1937. Missouri, New York and Vermont prohibited the sale of child labour products from other States. The minimum age limit for child labour was raised to 16 in North and South Carolina. Pennsylvania raised the compulsory school attendance age to 17 years beginning in 1938 and 18 years in 1939. (See also CHILD LABOUR AMENDMENT.) Wisconsin fixed an 8-hour day and 40-hour week limit for minors from 16 to 18 years of age, and also declared



A NEW STYLE of collar for the American workman, as seen by Cecil Jensen in *The Wilmington News*

newsboys to be employees of the publisher or news agency. Power to exclude minors from hazardous employment was delegated to labour departments in Connecticut and North Carolina. Arkansas and Colorado adopted laws governing apprenticeship, and Congress provided for the promotion of apprenticeship standards through the Federal Labor Department.

Modern restrictive industrial homework laws were adopted in Massachusetts and Pennsylvania, and such work was also regulated by laws adopted in Illinois and Texas. More effective regulation of fee-charging employment agencies was sought in laws enacted in Arizona, Maryland, Pennsylvania, and Texas. Improved industrial safety and sanitation laws were enacted and rule-making powers delegated to the State labour department in Arkansas, Florida and West Virginia. In eleven States, mine safety laws were strengthened or extended in coverage; and in Arkansas and Pennsylvania laws on the appointment of mine inspectors were revised. Boiler codes were adopted or amended in five States; a compressed air safety code was enacted in Washington, and an elevator safety code, in Michigan.

Workmen's accident compensation laws were amended in five States—Delaware, Indiana, Michigan, Pennsylvania, and Washington—to protect occupational disease victims. In Indiana such coverage was made all-inclusive, but on an elective basis; in the other four States, it was limited to specified diseases. There are now 27 American laws providing compensation for occupational diseases—14 with all-inclusive and 13 with "limited-list" coverage.

Many other liberalizing changes were made in the workmen's compensation laws of a total of about 35 States. Benefit scales were raised in New Mexico and South Carolina; the weekly maximum was increased in Georgia, New Hampshire, New Mexico, and Pennsylvania; and the weekly minimum was liberalized in Connecticut, Florida, Mexico, Ohio, Pennsylvania, and Vermont. The time limit on payments for total disability and to widows was abolished in Pennsylvania, and the total amount payable was increased in Georgia and Maryland. Waiting periods were short-



ened in Florida and South Carolina. Medical benefits were increased in a half-dozen States. Florida provided for double compensation to minors injured while illegally employed. Indiana and Maine created commissions to study the desirability of a State insurance fund. Pennsylvania made the cost of workmen's compensation administration a charge on insurance carriers and employers.

With adoption of new unemployment compensation laws in 12 States, and the Territories of Alaska and Hawaii, this legislation has now been extended to all of the States and Territories. The new State enactments in 1937 were in Arkansas, Delaware, Florida, Georgia, Illinois, Kansas, Missouri, Montana, Nebraska, Nevada, North Dakota, and Wyoming. In addition, about 30 other States strengthened existing laws by amendments. Validity of State and Federal unemployment compensation legislation was sustained by the Supreme Court in two sweeping decisions in May. Wisconsin completed its first year of benefit payments in July, and 22 additional States prepared to begin payments early in 1938.

Old age pension or assistance laws were adopted for the first time in seven States in 1937—Georgia, Kansas, New Mexico, North Carolina, South Carolina, South Dakota, and Tennessee. This left only Virginia without such a law. About 25 States amended their existing laws to conform with the Federal Social Security Act's provisions, to liberalize pension payments, or to strengthen administrative procedure. By August 1937, nearly 1,500,000 persons were receiving such assistance under the laws of 47 States, the District of Columbia, Alaska and Hawaii.

A revised plan for contributory old age retirement annuities for railway workers was adopted by Congress, following an adverse court ruling on the tax features of the 1936 legislation. The national old age insurance or benefit system set up in the Federal Social Security Act was launched by the beginning of tax collections for this purpose in January. This provision of the Act was held constitutional by the Supreme Court in May. Massachusetts enacted a law to discourage the use of maximum age limits in industry, and New York created a commission to study the problem of the older worker.

Although in most States administration has been placed in existing State departments, new departments for the administration of unemployment compensation or other social security legislation were created in Arizona, Delaware, Missouri, Montana, Washington, and Wyoming. Labour relations or mediation boards were provided in Massachusetts, New York, Pennsylvania, and Wisconsin. State labour departments were extensively reorganized in Arkansas, Georgia and Indiana, and significant changes were also made by law in the labour departments of Florida, Michigan, Pennsylvania, South Carolina, and Tennessee. In Congress legislation was pending at the end of 1937 for the reorganization of Government departments.

(J. B. AN.)

**Great Britain.**—In Great Britain the great industrial law of 1937 was the Factories' Act, which received the Royal Assent on July 30, and was the most important legislation of its kind since 1901. The act will control in detail the condition in which all factory work in Britain is done, and, for women and young persons, the maximum number of hours they may work on any day or in any week, and the maximum number of hours overtime in excess of the standard they may work in any year.

The act controls the lighting of factories, their ventilation and temperature. There are approximately 167,000 factories and 73,000 workshops on the registers of the Home Office. The new act, which comes into force in July 1938, abolishes the distinction between factories and workshops, and between textile and non-textile factories, and brings within its scope certain classes of premises hitherto excluded, including men's workshops to which overcrowding restrictions have hitherto not applied. The factory

inspectorate is to be considerably increased because of the complexity and scope of the new act. It was in the committee stage of the bill that it was decided that, after July 1, 1939, the weekly hours to be worked by young persons under 16 should be reduced to 44, but the home secretary has power to increase the hours to 48 if an industry can show that it will be seriously prejudiced if the labour of the under-sixteens were to be thus limited.

The earliest hour at which work for women and young persons may start was changed from 6 A.M. to 7 A.M., and for young persons under 16 the latest finishing hour was changed from 8 P.M. to 6 P.M.; normal working hours for women and young persons becomes 48 a week against 60 ( $55\frac{1}{2}$  in textile factories); there is a daily limit of 9 working hours against  $10\frac{1}{2}$  (10 in textile factories); and there must be no work after 1 P.M. on Saturday. Employment beyond 48 hours a week is not permitted for young persons under 16, but overtime employment for women and young persons above 16 is permitted up to 100 hours in a calendar year for women only the 100 hours may be increased to 150 in industries liable to seasonal or other pressure. (VI. BR.)

**Labour Party.** The most important developments in the British Labour party in 1937 were the adoption of the party's new "Immediate Program" and the revision of the Constitution so as to give greater weight to local labour parties in comparison with trade unions. The local parties will in future have seven, instead of five, representatives on the Party Executive (as compared with twelve from the trade unions and one from the miscellaneous affiliated bodies). Moreover, where the actual election has hitherto been made by the whole Conference, so as to give the trade union "card vote" the preponderance in the choice of local as well as trade union members, the local labour parties and the trade unions will in future choose their own representatives. This change was the outcome of considerable friction inside the party. It was strongly pressed for by an unofficial Association of Constituency Labour Parties, of which Sir Stafford Cripps was chairman. This body, having secured the desired change, seems now to have suspended operations, the party executive having promised to institute machinery for more effective consultation of the local parties, especially by means of regional conferences. It was part of the settlement, reached at the Bournemouth Conference in October 1937, that no further change should be made in the Party Constitution for three years.

The Party Conference rejected proposals for a united front with the Communist party and Mr. Maxton's Independent Labour party, thus in effect upholding the action of the executive in expelling the Socialist League earlier in the year for participation in the "United Front Campaign." The Socialist League had then upon dissolved; but at Bournemouth, Sir Stafford Cripps and Prof. H. J. Laski, both leading advocates of the united front, were elected to the executive by the local labour parties under the revised Constitution.

The new short program (or immediate program) of the labour party differs from earlier programs in being not inclusive but selective. Its intention is to include only such measures as an incoming Labour Government could expect to be able to deal with during its first period of office, or within the life of a single Parliament. It includes public ownership of the Bank of England (but not of the joint-stock banks), and of certain key industries (coal, electricity, gas, railways), co-ordination of transport services under public control, powers of easier land acquisition for public purposes, and public control over the location of industry in the interests of the distressed areas. It declares again a return to the gold standard, and for an adjustment of taxation designed to secure a better distribution of wealth. Special emphasis is laid on the need for increased food production with



ew to improved nutrition, a living wage for landworkers, and narrowing of the margin between wholesale and retail food prices. The program includes a scheme of improved invalidity pensions and retiring pensions for elderly workers, the effective raising of the school age to 15 (and later to 16) with maintenance allowances, a new Workmen's Compensation Act, and the abolition of the Means Test. In international policy, it declares strongly for a system of collective security under the League of Nations, and pledges a Labour Government to maintain armed forces adequate to implement this policy, and to democratize and improve conditions in the armed forces. At the Conference the Party also adopted a special statement on the rearmament question (also approved by the Trades Union Congress) declaring in favour of adequate defence measures, but insisting that armaments should be an instrument of a policy of collective security, and not a means to isolation. Party membership rose during the year, both in the trade unions and in the local labour party section. Trade union affiliated membership now exceeds 2,000,000, and individual membership in local parties is approximately half a million. (See also POPULAR FRONT. For United States see SOCIALIST PARTY.) (G. D. H. C.)

**Labour Unions.** The year, 1937, was one of the most eventful in the history of trade unionism in the United States. In that year total membership of unions reached all-time peak, surpassing 1920. Union agreements were made with several of the largest corporations and substantial parts of non-union industry were organized. The law governing trade unions was strengthened by decisions of the United States Supreme Court establishing the constitutionality of the National Labor Relations Act. The split in the organized labour movement was widened and deepened by the aggressive tactics of the Committee for Industrial Organization (C.I.O.) and the retaliatory measures employed by the American Federation of Labor (A.F. of L.). During the first half of the year strikes were numerous and prolonged and wages and working conditions were substantially advanced.

**The C.I.O.**—Foremost among the factors contributing to the spread of labour organization were the activities of the C.I.O. Political Committee, formed in Nov. 1935 by 10 unions affiliated with the A.F. of L. to encourage the organization of industrial unions in the basic industries and to demonstrate the feasibility of unionizing American workers, promptly launched extensive organizing campaigns throughout all classes of industry. Efforts

to compose the differences between the C.I.O. and its parent body failed. In Aug. 1936 the unions affiliated with the C.I.O. were suspended from membership in the A.F. of L. This action was followed by the intensification of the warfare between the two factions. The C.I.O. extended its jurisdiction into fields claimed by constituent unions of the A.F. of L., notably in the electrical manufacturing, lumber, metal, and local transportation industries and among maritime and clerical employees. In prosecuting its organizing campaigns, the C.I.O. created a nationwide staff of organizers, recruited largely from among experienced officials of established unions. Substantial funds for financing these activities were contributed largely by the three most powerful unions in the C.I.O.—the United Mine Workers, the Amalgamated Clothing Workers, and the International Ladies Garment Workers.

These campaigns of the C.I.O. met with unusual success. By the middle of 1937, unions affiliated with the C.I.O. had won contracts with the General Motors and Chrysler companies, the United States Steel Corporation, nearly all of the large companies in the rubber tire industry, and with a considerable number of firms in the textile industry. In New York the C.I.O. union of Transport Workers was recognized by the major subway and bus systems of the city. Among maritime employees groups affiliated with the C.I.O. which had earlier won almost complete control over the unions on the Pacific coast extended their control to the Atlantic coast and in the process destroyed the old International Seamen's union affiliated with the A.F. of L. At its first convention held in Atlantic City, Oct. 1937, the C.I.O. claimed that the number of unions affiliated with it had, in two years, increased from 10 to more than 30 and their combined membership from something more than 1,000,000 to nearly 4,000,000.

**Political Activity.**—Together with these advances in the field of union organization, the C.I.O. undertook to promote and organize independent political action by labour. Through the Labor's Non-Partisan League, composed of both A.F. of L. and C.I.O. unions but generally regarded as an arm of the C.I.O., the Committee participated actively in the municipal and State elections of 1937. In some places, the League put up candidates of its own and in others threw the weight of its support to one of the two old parties. Although these newly organized labour groups suffered bad defeats in the crucial elections in Detroit, Michigan, and Akron, Ohio, they polled a substantial vote and in some places, notably the industrial towns of Pennsylvania, the candidates named or endorsed by the C.I.O. were elected. The greatest victory earned by labour was in New York city where the political organization of the trade unions, the American Labor Party, polled an unexpectedly large vote and succeeded in electing a large proportion of the membership of the new city council. Although the American Labor Party includes both C.I.O. and A.F. of L. unions, it is substantially a C.I.O. organization.

Meanwhile the A.F. of L., at first stunned by the defection of several of its largest unions and the loss of 1,000,000 dues-paying members, set out to overtake its rival and recover its losses. Assisted by favourable business conditions, the resentment of those unions whose jurisdiction had been invaded by the C.I.O., and by the more friendly attitude of employers, the Federation began also to make considerable gains. At the annual convention held in Oct. 1937, the executive council reported that the number of members withdrawn by the C.I.O. unions had been more than made up by gains in other directions and that total membership amounted to 3,270,000. In the autumn of 1937, then, the aggregate membership of the C.I.O., the A.F. of L. and the independent railroad brotherhoods exceeded 7,000,000 and was 2,000,000 greater than the previous maximum of 5,000,000



Y, HOW THE CAT HAS GROWN!" Development of the wildcat strike, among  
sted Automobile Workers, as pictured by Minge in *The Detroit News*



reached during the business boom of early 1920.

In the advances made by organized labour during the year, the state of business, the tactics employed by the C.I.O., and decisions of the courts bearing on the law of trade unions played a determining rôle. Beginning roughly in the early months of 1936, American business had one of the largest and most sustained recoveries since 1933. Prices, wages, and employment rose. Margins of profits widened and the outlook for a further rise improved. Amid the prevailing uncertainties of the whole post-depression period, employers, fearful of stoppages and loss of orders, were inclined to make concessions. The unions, consequently, by calling strikes or threatening to do so, took advantage of these favourable conditions and managed to wrest union agreements from a substantial number of employers in a great variety of industries.

**Supreme Court Decisions.**—At the same time the position of unions was strengthened by the clarification of the basic national trade-union law. The National Labor Relations Act, signed by the President, July 5, 1935, had been promptly challenged by employers, and the board, created by the Act, had become involved in prolonged litigation. As long as the meaning of the law and the powers of the board remained in doubt, the law had been ineffective. On April 12, 1937, the United States Supreme Court delivered five decisions on cases in the steel, clothing, automobile, newspaper, and bus transportation industries, establishing the constitutionality of the Act and sustaining the powers of the National Labor Relations Board. These decisions which affirmed the right of Congress to regulate labour relations in manufacturing industries added directly and indirectly to the power of organized labour. In a short while the law was invoked by unions all over the country and many employers, now faced by the stringent terms of the Labor Relations Act, withdrew their opposition to labour organization and began to bargain with one or another union.

**The Sit-Down Strike.**—Probably the most potent weapon employed by organized labour in this period was the sit-down strike. This device, whereby groups of workers (often a relatively small minority) occupied a plant and held it until they had brought the employer to terms, was most extensively used by the C.I.O. By means of this type of strike union agreements were made with the Goodyear Rubber Co., General Motors, Chrysler, and with many smaller firms. The disrepute into which the use of this weapon brought local agencies of law enforcement and the rising resentment of employees unwillingly thrown out of work produced a hostile public opinion and soon forced the abandonment of the sit-down strike. But during the short period in which it was used, it proved the most effective weapon of the C.I.O. and the source of its most spectacular victories.

The climax of the strength of organized labour was reached in the summer of 1937. By that time the influence of increasing wages and costs, the reactions of the public and unorganized labour to the sit-down strike, and the disturbances associated with the conflict between the A.F. of L. and the C.I.O., began to make themselves felt in the more stubborn opposition to unions by employers. In a test of strength between the steel workers' union of the C.I.O. and several of the largest independent steel companies, involving long and costly strikes and widespread violence, the steel companies refused to yield or to submit the issues to a mediation board appointed by the President, and the union, apparently unable to win the support of the majority of the steel workers, was forced to call off the strike. This major defeat and the turn in business conditions which became noticeable by the end of the summer, resulted before the year was over, in a considerable decline in union membership and prestige. These same factors also produced great pressure on the leaders of the two fac-

tions in organized labour to end their quarrels and to restore unity to the labour movement. Peace conferences between committees representing the C.I.O. and the A.F. of L. were accordingly begun in Washington on October 25, 1937. But the conflict had apparently inflicted wounds too deep to cure and on December 20, peace negotiations were abandoned. (See also AMERICAN FEDERATION OF LABOR; COMMITTEE FOR INDUSTRIAL ORGANIZATION; LABOUR ARBITRATION; LABOUR LEGISLATION; SIT-DOWN STRIKES; STRIKES AND LOCK-OUTS.)

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(L. Wo.)

**Great Britain and Europe.**—Membership of all British trade unions increased during 1937 to 5,307,689 (801,775 women), which over 75% were affiliated to the trades union congress. Industries, excepting certain textile organizations, shared in the rise of membership, which continued during 1937. Substantial increases were shown by unions in the metal, machine-making and vehicle-building trades, transport (including railways) and general labour, coal-mining, national and local government, building, and distribution.

Growth in membership during 1937 was the common experience of almost all the other national trade union movements affiliated to the International Federation of Trade Unions, including the American Federation of Labor, which became affiliated during the year. New affiliations and expansion of the movement in many countries raised the total membership to 20,000,000, and this largely offset the loss of membership sustained by the International Federation of Trade Unions in earlier years through the destruction of the unions in Italy, Germany, Austria, and elsewhere. Negotiations were also opened for the affiliation of the Russian trade unions.

British unions, at the beginning of 1937, had a total income of £7,628,000, accumulated funds aggregating more than £16,000,000. A substantial reduction in expenditure on unemployment benefit was a feature of the year's work; expenditure on trade and friendly benefits, an integral feature of trade-union service, does not vary much from year to year. Excluding unemployment benefit, the unions in 1936 spent £2,623,000 on superannuation, funeral, sickness, accident, and other benefits to members.

**Collective Bargaining.**—Union negotiations during the year continued the upward trend of wage rates which became evident in 1934, and a total of approximately £750,000 in weekly full-time wages of about 5,000,000 workpeople was added during 1937. A large proportion of these wage increases were obtained by direct negotiation of unions with employers, and others took effect under arrangements made by trade boards, or other joint standing bodies, and under sliding scales based on selling prices. An average reduction of about 2½ hours per week in hours of labour affecting approximately 400,000 workpeople was reported during the year. No large-scale trade dispute was reported, excepting the stoppage of work by engineering apprentices, which led to an agreement with the engineering employers' federation to recognize the engineering unions in negotiating conditions for apprentices and young persons in that industry; and the stoppage of London busmen, which was settled on terms representing important concessions by the London passenger transport board to union claims. Trade disputes, involving approximately 600,000 workers, caused a loss of about 3,500,000 working days; this was somewhat higher than the respective total of disputes, workers involved, and working days lost in 1936.

**International Labour Standards.**—At the 1937 international labour conference at Geneva trade union representation secured



the passage of a convention for the 40-hour week in the textile industry. Draft conventions were also discussed in contemplation of reduced hours in the printing and chemical industries, but these failed to obtain the necessary majority of votes. At the 1938 conference there is to be a discussion on the general 40-hour week for all industries. Reduction of working hours to a standard of 40 per week was the objective of trade-union negotiations during the year. In some organized trades progress was made, and it was estimated that in 1937 about 1,750,000 workpeople in Great Britain had secured by collective agreement a maximum working week of 44 hours.

By the same means holidays with pay were won during the year in Britain by important agreements, notably in the engineering trades, some sections of the distributive trades, the garment industry, some of the coal-fields, and certain branches of transport. The movements towards both a shorter working week and paid holidays for all workers were strengthened by reforms instituted in other countries. French trade unions, whose membership rose to 5,000,000 during 1937, were able to maintain the 40-hour week spread over five days, with slight modifications, but economic difficulties deferred the full application of the French law to certain depressed industries. New Zealand is another country where, under a Labour Government, the 40-hour week has been instituted by law. Holidays with pay are a legal right for all workpeople, manual and non-manual, in 22 countries, and in 14 other countries certain classes of workers have become entitled, under legislation, to paid holidays; but in Britain it is estimated that not more than 4,500,000 workpeople, about half of whom are manual workers, at present enjoy paid holidays.

In Britain, extension of trade-union organization among non-manual workers and the development of trade-union relations with other organized professions were a feature of 1937. Workers in local government service and in the nursing profession were brought more closely into association with trade-union organization through the establishment of a national advisory committee representing the trades union congress and unions catering for local government employees, and a similar body for the nursing profession.

Unions interested in the organization of nurses formed a federation during the year to promote trade unionism among them; and a charter was framed setting forth standard conditions in respect of hours of duty, overtime, annual leave, sick pay, superannuation, training, and amenities free from unnecessary restriction. (See also LABOUR; WAGES AND HOURS.) (W. M. CL.)

**Labrador**, the most easterly portion of North America, marching inland with the Canadian province of Quebec, and facing the Atlantic to the east; a dependency of Newfoundland; area, c. 115,000 sq.mi.; population (1935) 4,700, mainly Eskimos. There are no towns. The people are occupied in hunting and in the valuable cod, salmon, and other fisheries. There are about 50 postal stations, but no railways, roads, or regular air communications. For trade and financial statistics, see NEWFOUNDLAND.

**Lacrosse** continued its popularity in Great Britain, the United States and especially Canada during 1937. The significant development was the tremendous increase in the United States. Playing games with many of the teams of their Canadian neighbours, American colleges included the game as a varsity sport in athletic programs, additional clubs took it up and countless secondary schools added it to the sports curriculum. The national open lacrosse title passed from the hands of the Mount Washington Club to the Baltimore Athletic Club in a game at Baltimore, Maryland. Previously, the Mount Washington Club,

considered by North American observers as one of the finest in the sport, had won 33 consecutive games. Baltimore's triumph in the championship game was a sensational upset. Further laurels were won by Baltimore when the Baltimore City college annexed its third successive national interscholastic title by defeating the Brooklyn (N.Y.) All-Stars. It was the thirty-sixth straight victory for the Baltimore collegians. The University of Maryland clinched the national collegiate championship by vanquishing Penn State and also thereby finished its season unbeaten. The Maryland freshmen also were victorious in their title game with the Penn State first-year players. The United States Intercollegiate Lacrosse Association sponsored and managed a composite All-American team in a series of exhibition games in England during the summer. Players were chosen for the American ten from among the leading college stars, some of the club athletes and a few naturally talented stick-wielders. The American team met with a measure of success against some English opponents but found others too strong. The exhibition series wound up with the American squad having broken about even on games won and lost. The club teams playing in Canada, England and the United States all reported good seasons. (T. J. D.)

**La Guardia, Fiorello H.** (1882— ), mayor of New York city was born on the lower east side of Manhattan island, Dec. 11, 1882. His father, Achilles La Guardia, of Italian origin, was a United States bandmaster. His mother was Irene Coen Luzatti. At an early age, he was taken to Prescott, Ariz., where he passed through high school. When he was 15, he obtained employment on a St. Louis newspaper and he had youthful ambitions to be a jockey, a prize fighter and a ball player. His father died from eating Army beef and the boy was taken by his mother to Budapest where she had relations. From 1901-04 he was consular agent at the U.S. consulate at Budapest and Trieste. From 1904-06, he served as acting-American consul at Fiume where he was regarded as sympathetic to America-bound emigrants. His remarkable knowledge of languages enabled him to serve as interpreter on Ellis island, 1907-10, and he received a bachelor of law degree at New York university in 1910.

Always a registered Republican he was appointed deputy attorney-general by Gov. Whitman in 1915. In 1916, a picturesque campaign in New York city during which his speeches were multilingual, carried him into Congress as a progressive (1917-21). He voted for the World War and tried to get into the draft but was rejected for being too small. In Italy, he led a U.S.A. air squadron, being decorated for wounds sustained during crashes, and after Caporetto, he "stumped" Italy in the interest of fighting morale. In 1921, he was the first Republican in twenty years to be elected aldermanic president of New York. There followed ten years in Congress (1923-33) where he was frequently associated with Norris of Nebraska, La Follette of Wisconsin and Brookhart of Iowa. He opposed prohibition, tried to have Andrew Mellon impeached as secretary of the Treasury, obtained the removal of two Federal judges and fought pork barrel appropriations. In 1929, he was defeated for mayor by James J. Walker, but was elected in 1933 in a three-cornered fight. In 1937, he was re-elected by a plurality of 450,000 votes over Jeremiah T. Mahoney—a victory that shook Tammany Hall to the foundations.

Mayor La Guardia's activities during 1937 were not confined to his re-election campaign. In March, for example, he roused Germany to diplomatic protests when he attacked Chancellor Hitler in an address before the women's division of the American Jewish Congress. Locally he concentrated his attention on the speedy inauguration of a Federal housing program, the continuance of



Federal relief, and the protection of labour interests. The support of labour which assured his re-election was a result of his championship of the Federal child labour amendment, his desire for a complete unionization of New York workers, and his successful mediation in strike disputes.

**Lamb:** see MEAT.

**Land Banks:** see FEDERAL LAND BANKS.

**Languages.** In stating the number of speakers of any language, we have the difficulty not only of ascertaining the facts, but of interpreting them. Compromising as well as the facts allow, we may give the following table of the principal, and some other, languages with estimated numbers of speakers:

American Indian Languages . . . . .	500,000	Gaelic (Irish and Scottish) . . . . .	600,000
Arabic . . . . .	25,000,000	German . . . . .	80,000,000
Australian Aboriginal . . . . .	150,000	Gipsy . . . . .	500,000
Basque . . . . .	500,000	Greek . . . . .	5,500,000
Bengali . . . . .	50,000,000	Hindustani . . . . .	90,000,000
Bulgarian . . . . .	4,500,000	Hungarian (Magyar) . . . . .	20,000,000
Burmese . . . . .	7,000,000	Italian . . . . .	40,000,000
Chinese . . . . .	430,000,000	Japanese . . . . .	55,000,000
Czech . . . . .	8,500,000	Malay . . . . .	1,000,000
Danish, Icelandic, Norwegian and Swedish . . . . .	12,000,000	Oceanic (Polynesian and Melanesian) . . . . .	50,000,000
Dravidian Languages . . . . .	65,000,000	Persian . . . . .	10,000,000
Dutch . . . . .	10,000,000	Polish . . . . .	30,000,000
English . . . . .	180,000,000	Portuguese . . . . .	37,000,000
Eskimo . . . . .	30,000	Pushtu . . . . .	5,000,000
Esperanto . . . . .	100,000(?)	Rumanian . . . . .	16,000,000
Finnish . . . . .	3,000,000	Russian . . . . .	85,000,000
French . . . . .	45,000,000	Siamese . . . . .	5,000,000
		Sinhalese . . . . .	3,000,000
		Spanish . . . . .	65,000,000
		Turkish . . . . .	7,000,000
		Welsh . . . . .	2,000,000

(H. O. Co.)

**Lanital (Milk Wool):** see WOOL: *Wool Research*.

**Laos:** see FRENCH INDO-CHINA.

**La Roche-Guyon Bridge:** see BRIDGES.

**Laszlo de Lombos, Philip Alexius** (1869-1937), naturalized British portrait painter, whose subjects included many leading figures of Europe, England and the United States. A native of Budapest, he was naturalized in 1914. He won numerous prizes for his portraits which included five presidents of the United States and such rulers as King Edward VII, Queen Alexandra, Emperor Franz Joseph, and Benito Mussolini. A brief account of his life may be found in the *Encyclopædia Britannica*, vol. 13, p. 736. His death occurred in London, Nov. 22, 1937.

**Latin America,** or Hispanic America, is that portion of America which derives its culture and institutions from the Hispanic nations of the Old World, Spain and Portugal, embracing 20 republics and Porto Rico; languages, Spanish; Portuguese, in Brazil; and French (officially), in Haiti. The area is approximately 8,050,000 square miles. Population (estimate 1937) 95,000,000. The people are white, mestizo, and Indian, with negroid elements predominant in the Dominican Republic and Haiti and prominent in Brazil, Cuba, and on the Caribbean coast. The largest cities are Buenos Aires, 2,388,645, third largest in America; Rio de Janeiro, 1,756,080; São Paulo, 1,167,862; and Mexico City, 1,028,068. The year 1937 saw in general an economic improvement, although the instability of the market for coffee, a major crop in most of the tropical countries, caused uneasiness. Politically, there were violent changes only in Bolivia and in Paraguay, although unrest existed in many of the coun-

tries. International relations were marked in general by a greater friendliness with the United States, the aftermath of the Buenos Aires Conference of 1936, and with each other, except for the sharp clashes along the Dominican-Haitian boundary and the continuation of the Bolivia-Paraguay and Ecuador-Peru boundary controversies (see CHACO; HAITI; PERU). Foreign trade showed considerable development in 1937 with the United States, the largest participant, increasing its proportion. Exports are, in the main, raw materials, especially tropical products, and wheat and meat products in Argentina and Uruguay, with petroleum an increasingly important item in several countries. Manufacturing is rapidly developing but is inadequate to supply domestic demands. The Roman Catholic faith is predominant in all the countries, with, however, a varying degree of relationships with the Roman Catholic Church itself. Education is generally inadequate but considerable advances are being made.

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**Latter Day Saints:** see MORMONS.

**Latvia,** Baltic republic of north-central Europe, bounded N. by Estonia, S. by Lithuania and Poland, E. by Russia; member of the League of Nations. Capital, Riga (seaport; 385,063-1935). President, Dr. Karlis Ulmanis (1936; Premier 1934). National flag, a white horizontal stripe on red.

**Area and Population.**—Area: 20,056 sq.mi. (plus 5,339, in land water), divided into Vidzeme (Livonia), Kurzeme (Courland), Zemgale, and Latgale. Population (1935): 1,950,502; religions: Protestant (56%), Roman Catholic (24.5), Greek and Orthodox (14.5); 77% are Letts, 12% Russians. Towns: Liepāja (Libau, seaport; 57,098) and two others above 30,000.

State-aided education figures: (1935-36), 1,907 elementary schools, with 223,483 scholars; 122 secondary, with 22,022. In the Latvian university, Riga, there were 7,225 students.

**History, Trade, Finance, and Defence.**—Theoretically, the sovereign power of the people is represented by the *Saeima* (100 elected for three years by universal suffrage and proportional representation), which, in turn, elects the president; but in 1934 the Parliament was disbanded and power is concentrated in the Cabinet.

In June, Lord Plymouth of Great Britain visited Riga, and M. Munters, foreign minister, created a precedent in cordial relations with Soviet Russia by visiting Moscow.

Agriculture predominates, but though there is little mineral wealth, industrialization is advancing (metallurgical, textile chemical, foodstuffs products). The chief exports are timber, butter, and flax. Imports (1936): 122,000,000 lats (£4,880,000); exports: 138,000,000 (£5,520,000); Britain takes three-fifths.

Currency unit: (silver) lat (at par, 25.22 lats=£1). Budget (1936-37 estimate): 160,000,000 lats. Notes (Bank of Latvia fully covered): 43,000,000 lats.

Army (conscript; term of service, 12-15 months): 2,200 officers, 23,000 others; 80 aeroplanes; navy: 2 submarines, 4 other craft.

**BIBLIOGRAPHY.**—R. O. G. Urch, *Latvia: Country and People* (Riga 1935). (H. Fw.)

**Law and Legislation.** For Law and Legislation in the United States see CONGRESSIONAL LEGISLATION and STATE LEGISLATION.

**Public Statutes of the United Kingdom.**—In international affairs, the London Naval Treaty Act, 1937, gave legislative effect to a minor clause of the London Naval Treaty, 1936, which



deals with the procurement of an admiralty licence for the building and despatch of vessels of war.

In the region of national defence, the Defence Loans Act provided money for the rearmament policy of the Government; it enabled the Treasury to issue out of the Consolidated Fund from time to time during the five financial years ending March 31, 1942, sums not exceeding in the aggregate £400 millions for the defence services. The Air-Raid Precautions Act assists local authorities in developing protective schemes against air raids, much of the total cost being borne by the national exchequer.

The Regency Act is of considerable constitutional importance. It improves upon earlier and rather haphazard legislation by providing for a regency if the sovereign is under 18 years of age, or if certain specified officers of state certify that he is, by reason of infirmity of mind or body, incapable of performing the royal functions, or is, for some definite cause, not available for such performance. The regent is to be the person next in line of succession to the Crown, provided that he is a British subject of full age, and is domiciled in the United Kingdom and is not disqualified by the Act of Settlement, 1701-1702. If the illness does not amount to the infirmity just described, or in the event of absence or intended absence, the sovereign may delegate the royal functions to certain "counsellors of State." Provision is also made for guardianship of the sovereign during a regency and for incapacity of the regent himself.

Public health and welfare were treated in the following acts: The Public Health (drainage of trade premises) Act controls the discharge of trade effluents into sewers. The Physical Training and Recreation Act is a striking departure from the *laissez-faire* attitude towards athletics. It continues the existence of two national advisory councils which are to investigate and advise upon the maintenance and improvement of the physical well-being of the people by means of exercise and recreation. The councils are to appoint local committees and sub-committees with similar duties of review, examination, and report. The Board of Education may make grants in aid of local requirements. The Local Government Superannuation Act makes further and better provision for the payment of superannuation allowances and gratuities by local authorities and by certain statutory undertakers. The Act is of widespread interest in view of the great number of employees who are affected by it.

A similar enactment, the Local Government Superannuation (Scotland) Act, deals with Scotland. The Widows', Orphans', and Old Age Contributory Pensions (voluntary contributors) Act extends on a voluntary basis an Act of 1936 to men and women whose incomes do not exceed respectively £400 and £250 a year. The age of applicants during the first year after the Act must be under 55, and of applicants thereafter, under 40. Weekly contributions are to range from sixpence upwards.

As to trade and commerce, the Trade Marks (amendment) Act embodied many amendments of the laws relating to that topic. The Factories Act is chiefly a great consolidation of the Factory and Workshop Acts, 1901 to 1929, but among its 160 sections are also included some substantive amendments of this branch of the law. The Export Guarantees Act amends and consolidates the Overseas Trade Acts, 1920 to 1934. In order to encourage overseas trade, the Board of Trade may, with the consent of the Treasury, give to any person carrying on business in the United Kingdom financial guarantees in connection with the export to any country of goods, not being munitions of war. In general, the guarantees are limited to home-made goods. The amount of liability of the Board of Trade in respect of such guarantees is not to exceed £50 millions.

Much general assistance is given to farmers by the Agriculture Act, which assists them in increasing the fertility of their land,

secures them against any substantial fall in the price of oats and barley, raises the limit of the quantity of wheat in respect of which deficiency payments under the Wheat Act, 1932, may be made at the full rate, makes further grants for land drainage, and promotes the eradication of diseases of animals and poultry, establishing for that purpose a national service of veterinary inspectors.

In private law, the greatest change made by the legislature was the Matrimonial Causes Act. The English law of divorce exhibited some crying defects which had led to equally crying abuses. The grounds for divorce were so crabbed and so out of touch with modern ideas that artificial adultery was used as a mask for involving the jurisdiction of the divorce court in cases where there was in fact complete incompatibility of temperament or some more substantial reason for claiming a dissolution of marriage. Of these latter reasons the Act takes account by allowing either spouse to petition for divorce on the ground of (1) adultery, or (2) desertion for three years, or (3) cruelty, or (4) incurable unsoundness of mind after care and treatment for at least five years; and a wife is allowed to do so on the ground that her husband has been guilty of rape, sodomy, or bestiality.

The following restrictions are laid down: (i) Where adultery is proved, divorce will not be decreed if there has been connivance, condonation, or collusion on the part of the petitioner. (ii) No petition may be presented until three years have elapsed from the date of the marriage; but this may be relaxed in cases of exceptional hardship suffered by the petitioner or of exceptional depravity on the part of the respondent. (iii) The petitioner's own adultery or cruelty may prevent his or her success in the suit. The Act also deals with judicial separation, which is now obtainable on any of the grounds on which divorce may be decreed, subject to the like qualifications, except the restriction relating to the first three years of marriage.

New grounds for seeking a decree of nullity are also added. They are: (1) non-consummation of the marriage owing to wilful refusal of the respondent; (2) that at the time of the marriage there was on the part of the respondent (a) unsoundness of mind, or recurrent fits of insanity or epilepsy, or (b) venereal disease if it were in a communicable form, or (c) pregnancy by some person other than the petitioner. But in the cases under (2), the Court must be satisfied that the petitioner was, at the time of the marriage ignorant of the facts alleged; that proceedings were instituted within a year from the date of the marriage; and that marital intercourse had not taken place since the petitioner discovered the existence of the grounds for the decree.

Courts of summary jurisdiction are given wider powers in making separation or maintenance orders. The Summary Procedure (domestic proceedings) Act is another statute affecting private law. It makes several improvements in the application of this procedure to "domestic proceedings" (matrimonial disputes, bastardy, guardianship of infants) and in the regulation of the duties of probation officers. In such proceedings the Court is to include, so far as is practicable, a man and a woman; the public (except press representatives) are in general to be excluded from the hearing; and newspaper reports may publish no more than the names of the parties and witnesses, the grounds of the application, a concise statement of the charges and defences, legal points, and the decision of the Court. (See also DIVORCE.)

(P. H. W.)

**Lawn Tennis.** The lawn tennis season of 1937 began on January 6th, when Ellsworth Vines, former American singles champion, met Frederick J. Perry of England who had recently turned professional, at Madison Square Garden, New York. The contest was remarkable for the mediocre and dis-



appointing quality of play, and for the gallery, 17,630 persons, said to be the largest crowd ever to watch a game of tennis. The two players then left for a barnstorming tour of the United States which lasted four months.

The first of the four great national championships was held on January 27, at Sydney, New South Wales. Vivian B. McGrath, a 20-year-old Australian, became champion, defeating a newcomer to international play, John E. Bromwich, in five sets. With the veterans, Crawford and Quist, these players faced the United States Davis Cup team at Forest Hills, L.I., New York, on May 29, 30 and 31. Unfortunately both Quist and McGrath were ill and young Bromwich was unequal to the task of replacing them. Budge, Grant and Mako took part for the American side and won all five matches. Only a single set, taken by Bromwich from Budge, went to Australia.

The second national tournament of the year was the French championships held in Paris, from May 18 to 30. Tennis history was made when German stars won three of the five events. Cramm, the holder, refused to defend, but Henkel, his teammate proved an able substitute, defeating Henry W. Austin of England in straight sets in the finals, and winning the doubles with Cramm. The former Fräulein Krahwinkel, now married to a Dane and playing as Frau Sperling, defeated Madame Mathieu of France in two sets for the women's title.

The English championships at Wimbledon took place from June 21 to July 3, and were notable for American triumphs. Budge won the men's singles with the loss of only one set, to his teammate, Parker, in the semifinals. In the finals he defeated Cramm in three straight sets. The doubles resulted in a victory for Budge and Mako, who in the finals beat Hughes and Tuckey of the English Davis Cup team, in four sets. England's only victory came in the women's singles, Miss Dorothy Round capturing the title she held in 1934.

The German Davis Cup team won the European Zone finals and came to Wimbledon on July 17 to face the United States. On this, the last contest of this series, hinged possession of the Cup for 1937. Cramm won the first two sets after deuce had been called in each, but Budge rallied to even the match. Cramm led four games to one in the deciding set, but Budge pulled up to five all, and after six match points won the set, eight-six. The following week the victors challenged Great Britain for possession of the Davis Cup. Their victory was easy, for Hughes the best English doubles player was unable to compete, and Hare, the second singles man, was no match for either Parker or Budge. So for the first time since the French defeated the United States in 1927, the Americans won and the Davis Cup returned to the U.S.

The Wightman Cup matches, played annually between teams of women from the United States and Great Britain, were held at the West Side Tennis Club on August 20 and 21, and resulted in a one-sided victory for the home players, six matches to one. For the first time, however, an American title went to Germany when Cramm and Henkel defeated Budge and Mako in the doubles finals at the Longwood Cricket Club, Chestnut Hills, Mass., in straight sets. The fourth important singles tournament of the year was that of the United States at the West Side Tennis Club September 2 to 11. It resulted in a win for Budge who did not lose a set until the last round when he defeated Cramm in five sets, a match less close than the score indicated.

A remarkable performance was the victory of Señorita Anita Lizana on her initial visit to the United States in the women's singles. She did not lose a set to a strong field, and for the first time an American title went to Chile.

Budge was the player of 1937. His superiority over other amateur players was clearly proved. But the question of world supremacy in tennis remains unsettled.

Many observers believe Budge would today conquer Vines Tilden, Perry or any professional. This will not be ascertained until Budge chooses to become a professional. An open tournament, with both amateurs and professionals of the highest standing competing, seems as far away as ever, while the men who control tennis remain at the head of what was once a sport and has now become a huge commercial enterprise. (J. R. Tu.)

**Lead.** The nine chief lead-producing countries, with outputs in excess of 50,000 tons, supply about 90% of the world total, the remaining 10% being scattered among a large number of minor producers, only three of which, Italy, Poland and the United Kingdom, produce amounts in excess of 10,000 tons. World production declined 33% from 1929 to 1932, and in 1936 had recovered to 85% of the former high.

Division of these figures between the United States and the rest of the world (total ex. U.S.) shows strikingly the markedly greater extent to which the depression affected the lead industry in the United States, where the output declined 60% and has recovered to 58% of the former high, while the rest of the world declined only 18% and has regained the entire loss, with a small margin of excess.

World Production of Lead  
(In thousands of metric tons)

	1929	1932	1934	1935	1936
Australia . . . . .	177.3	189.2	205.3	220.5	200.6
Belgium . . . . .	62.2	61.5	66.7	67.0	69.2
Canada . . . . .	148.0	116.1	157.1	153.8	173.8
Germany . . . . .	97.9	95.2	120.0	122.3	139.1
India . . . . .	81.5	72.3	73.0	73.2	74.3
Mexico . . . . .	248.8	130.3	175.6	185.2	218.3
Spain . . . . .	133.3	109.8	74.9	70.8	46.6
U.S.S.R. . . . .	6.2	18.7	27.2	36.8	50.8
United States . . . .	624.2	251.7	300.2	336.8	362.9
World Total . . . .	1,756.8	1,179.7	1,365.8	1,422.5	1,499.7
Ex. U.S. . . . .	1,132.6	928.0	1,065.6	1,085.7	1,136.8

The United States is the largest producer, with 36% of the total in 1929, 21% in 1932, and 24% in 1936, followed by Australia, Canada, and Germany, these four countries accounting for two-thirds of the total. Marked increases over 1929 are found in the Soviet Union, Germany, Australia and Canada, although in 1936 Australia dropped below 1935; the chief decreases were in the United States, Spain, and Mexico. Among the minor producers there were relatively large increases in Italy and the United Kingdom, and decreases in Poland and France. Preliminary reports for 1937 indicate an increase in world output of about 12% over 1936, to which the major countries contributed as follows: Germany 19%; United States 14%; Australia 11%; Canada 9%; and Mexico 3%. There has been a large drop in Spanish production as a result of the civil war, and during 1936 the Loyalist Government took over the supervision of the mine in Jaén Province, which produce about two-thirds of the output, although work was continued under the management of the owners.

Consumption of lead in the United States is practically independent of both imports and exports, each of which amounts to less than 1% of the total. The Australian, Belgian, Canadian, Indian, Mexican and Spanish outputs are largely exported, there being a large surplus over local consumption demands; German production, although large, must be supplemented by imports which amount to 40-50% of the production, which is itself partly from imported ores. The United Kingdom has only a small home output, and depends on imports, largely from Empire sources.

In the field of technology, most of the interest is in the method of refining and desilverizing, particularly the continuous process for desilverization. (See also METALLURGY.) (G. A. Ro.)



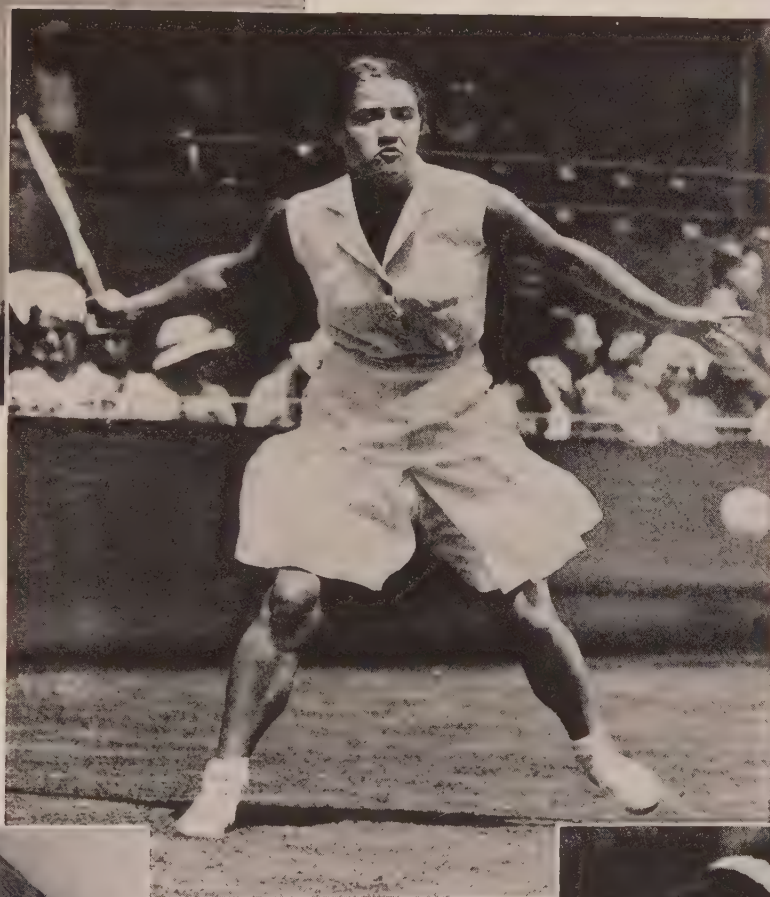


JADWIGA JEDRZEJOWSKA,  
Poland's woman champion

EVELYN DEARMAN, of the English  
Wightman Cup team won the Canadian  
championship



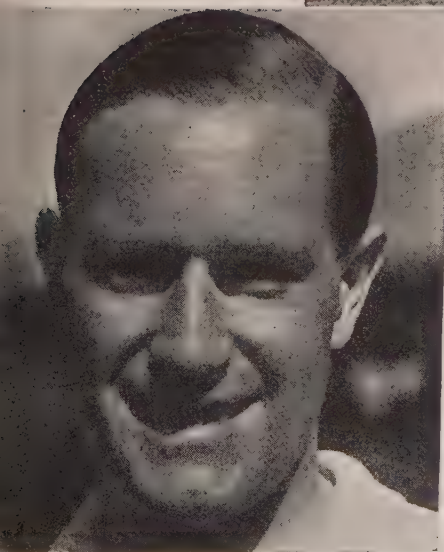
J. DONALD BUDGE won the British  
and United States singles champion-  
ships, the English mixed doubles, with  
Alice Marble, and, with Frank Parker,  
the Davis Cup



ALICE MARBLE, 1936 U.S.  
woman champion



KAY STAMMERS, a member  
of England's Wightman Cup  
team



BARON GOTTFRIED VON CRAMM,  
champion of Germany



ANITA LIZANA, a Chilean and the first  
South American to win the U.S. na-  
tional tennis tournament for women



**League of Nations.** In December 1936 the Council dealt with the Turkish request, under Article 11, that the recognized rights of the Turkish populations of the Sanjak of Alexandretta should be guaranteed, in view of the approaching termination of the French Mandate over Syria, by the conversion of the Sanjak into an independent State. It approved an interim agreement providing for the despatch of three neutral observers to the Sanjak and the initiation of conversations between France and Turkey. These resulted in agreement, and on Jan. 27, 1937, the Council approved the main lines of a compromise settlement submitted by its rapporteur (M. Sandler) in agreement with the two parties, who, at the Council's May session, announced their acceptance of the settlement, which entered into force on Nov. 29, 1937, as a final solution of the question.

**Danzig.**—At its session in January the Council also adopted the report of its Committee of three requesting it to take note of the Polish representative's report on his endeavours to overcome the difficulties between the League High Commissioner and the Senate in Danzig. On February 18, Prof. Carl Burckhardt, a Swiss national, in succession to Mr. Sean Lester, who had been already appointed deputy secretary-general of the League, took up his appointment as high commissioner for a term of three years.

**Spain.**—On Dec. 12, 1936, the Council, at the request of the Spanish delegate, under Article 11 of the Covenant, considered the situation in Spain. It adopted a resolution recalling the duty of every state not to intervene in the internal affairs of another State, recommending the Non-intervention Committee to secure the effective fulfilment of the undertakings entered into, and authorizing the League's secretary-general to make available the technical organs of the League in regard to problems of a humanitarian character.

A competent delegation of the Health Committee was despatched to Spain.

Shortly before the May session of the Council, the Spanish Government requested that the situation in Spain should be placed on its Agenda, on the ground that documents captured from foreign prisoners at Guadalajara confirmed the presence of regular Italian military units in Spain, which constituted veritable aggression.

On May 29 the Council adopted a resolution regretting the development of the situation, but noting the entry into force of the International Control Scheme on April 19/20 and the discussions of the Non-intervention Committee regarding the withdrawal of non-Spanish combatants, and condemning the bombing of open towns and the employment of methods of warfare contrary to international law. The Spanish situation was considered once more in September, when the Spanish delegates protested, both in the Council and in the Assembly, against the continuance of the Non-intervention Agreement, claiming that it denied to the legal Government the right to obtain arms from abroad at a time when flagrant intervention in Spain and piracy in the Mediterranean were continuing on such a scale as to constitute aggression within the meaning of the Covenant. They also protested against the failure of the Nyon Conference to extend naval protection against pirates to vessels of the Spanish Government. The sixth Committee, to which the matter was referred, after long and difficult discussions, submitted a strong resolution to the Assembly referring to the presence of "veritable foreign army corps fighting on Spanish soil," and declaring that unless foreign troops were withdrawn, League members would reconsider their decision to continue the non-intervention policy. This resolution was supported by 32 states in the Assembly, but failed, under the unanimity rule, to secure adoption, owing to the adverse votes of Portugal and Albania. Fourteen states (mostly South American)

abstained. Finally, the Council adopted a resolution condemning piracy in the Mediterranean, and noting that the measures adopted at the Nyon Conference had proved effective. (See MEDITERRANEAN, THE; NON-INTERVENTION COMMITTEE; SPAIN.)

**Chinese-Japanese War.**—On September 12 the Chinese Government appealed to the League, invoking Articles 10, 11 and 12. This appeal was referred to the Far Eastern Advisory Committee set up in 1933 to follow the situation after the Manchurian conflict. China, Australia, Germany, and Japan were invited to participate; the two latter refused. The United States was represented by an observer. On September 29 the Assembly adopted a resolution, submitted by the Committee, condemning the bombing by Japanese aircraft of open towns in China. The Committee reports were adopted by the Assembly on October 6. The conclusion of the first was that Japanese action could not be justified on any grounds; the second recommended that efforts should be made to restore peace by agreement, and that the League should invite States-members, signatories of the Washington Nine-Power Treaty of 1922, to initiate the "full and frank communication" provided for by that treaty. The Assembly also adopted a resolution expressing moral support for China, and recommending members not to take any action calculated to weaken China's power of resistance and also to consider how far they could individually extend aid to China. The session of the Assembly was adjourned, not closed. Although on October 6, invitations were issued to States-members signatories of the Nine-Power Treaty it was decided that, in the hope of securing Japanese participation, the conference should not be held under League auspices; it opened in Brussels on November 3. (See NINE-POWER CONFERENCE.)

**Raw Materials.**—The 18th Assembly endorsed the conclusion of the report of the Raw Materials Committee, set up by the 17th Assembly, that while access was not seriously restricted, the availability of certain states to find the means to purchase raw materials was severely limited; the Committee suggested as a solution that every effort should be made to restore international exchanges on the widest basis. In December the Economic Committee drew up a report with a view to giving effect to these suggestions.

**International Trade.**—It recommended that raw materials should not be subject to any export prohibition or restriction except in pursuance of an international scheme; that they should not be subject to export duties, except those imposed as a uniform rate for revenue purposes; that foreigners should have the same facilities as nationals for developing natural resources everywhere; and that consuming interests should participate in the administration of international regulation schemes, which should provide them with adequate supplies.

The Assembly also adopted the Economic Committee's report, which noted the favourable effects of the tripartite monetary agreement of September 1936, and approved the suggestion that the existing system of quotas and exchange control should be relaxed and speedily abolished. It also requested the Economic and Financial Committees to pursue the study of the practical measures to increase international trade and facilitate the removal of exchange control, and to co-ordinate, in collaboration with the I.L.O. the examination of the following problems: improvement of the standard of living; the prevention of slumps; agricultural credit and insurance; factors affecting monetary systems; state and municipal indebtedness; fiscal evasion. It was decided to set on foot a study of demographic problems.

**Nutrition.**—The Mixed Committee of agricultural, economic and health experts submitted its final report to the 18th Assembly. Its general conclusions were that food habits in western communities had been tending to change in the right direction, and it



Increased demand had benefited agriculture. It examined the influence of price on consumption and the effect of improved production methods, commercial policy, and distribution costs on price. Malnutrition it found remained a serious threat to health. The Assembly, in adopting the report, emphasized the close relationship between nutrition and national income, and urged those Governments which had not yet done so, to set up National Committees on nutrition.

**Opium.**—The Assembly drew attention to the deterioration of the position in the Far East, and appealed to Japan to put an end to the clandestine manufacture of and illicit traffic in opium and drugs carried on by Japanese subjects in China. It attached great importance to the preparatory work, discussed by the Opium Advisory Committee in 1937, for a conference on the limitation of the cultivation of the opium poppy and of the production of raw opium to be held in 1940.

**Traffic in Women.**—In February a conference of Central Authorities in Far Eastern countries discussed at Bandung measures taken in the East to deal with the traffic in women and children. The Assembly requested the Council to take the necessary steps to carry out the Conference's recommendations for the establishment of a Bureau of the League in the Far East to receive and circulate information and co-ordinate action on this subject.

**Rural Hygiene.**—In August an Inter-Governmental Conference on rural hygiene in Far Eastern countries met at Bandung, and discussed the improvement of health and medical services, rural sanitation, nutrition, and measures for combating certain diseases in rural districts. (See also DRUGS AND DRUG TRAFFIC; MANDATES AND MANDATED TERRITORIES; REFUGEES.)

**League Budget.**—The 18th Assembly adopted the budget for 1938, amounting to 22,682,000 gold francs. The closed accounts for 1936 showed a net cash surplus of 5,592,101 gold francs. Current contributions from members to the 1936 budget represented 91.75% as against 88.25% in 1935.

**Composition of the Council.**—The League Council (1936-37) was composed of: United Kingdom, France, Italy, the U.S.S.R. (permanent members); Chile, Spain, Turkey (1934), Ecuador, Poland, Rumania (1935), Bolivia, New Zealand, Sweden, China, Latvia (1936) (members for three years). At the 18th Assembly, on September 20, Spain and Turkey failed to secure a vote for re-election, and Iran and Peru were elected; and on September 28 Belgium was elected to the Council.

**Changes in Membership.**—On February 19 Paraguay finally withdrew from the League; in August San Salvador, and in December Italy gave the necessary two years' notice of withdrawal. Egypt entered the League at an Extraordinary Session of the

Assembly on May 26, 1937. (See also CHINESE-JAPANESE WAR; DANZIG; IMPERIAL CONFERENCE; NEUTRALITY: *League of Nations*; REFUGEES.)

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Table 1.—Estimated Number of Staple Hides and Skins Tanned (ooo's omitted)

WORLD					
	1929	1934	1935	1936	1937
Cattle hides. . . . .	101,614	94,897	103,507	105,223	104,874
Calf and kipskins . . .	74,650	69,115	70,452	75,012	74,166
Goat and kidskins . . .	87,664	73,082	74,426	80,122	83,557
Sheep and lambskins . .	96,211	88,415	91,371	90,729	90,913
UNITED STATES					
Cattle hides. . . . .	19,146	19,771	21,932	22,628	22,875
Calf and kipskins . . .	15,364	12,442	14,140	13,127	12,840
Goat and kidskins . . .	55,686	44,982	48,250	47,450	49,179
Sheep and lambskins . .	38,985	34,255	38,465	37,942	38,316
GERMANY					
Cattle hides. . . . .	9,116	7,826	9,074	9,610	9,817
Calf and kipskins . . .	10,317	11,403	12,762	12,436	13,006
Goat and kidskins . . .	8,512	6,951	7,775	7,527	8,313
Sheep and lambskins . .	10,004	9,029	9,168	10,608	10,411
UNITED KINGDOM					
Cattle hides. . . . .	10,612	9,435	9,862	11,063	11,413
Calf and kipskins . . .	7,319	6,087	6,451	6,918	7,617
Goat and kidskins . . .	8,516	11,300	12,015	12,613	13,005
Sheep and lambskins . .	9,115	12,050	9,003	7,907	8,012
FRANCE					
Cattle hides. . . . .	9,007	7,014	6,996	6,159	7,248
Calf and kipskins . . .	7,689	6,507	6,713	7,005	7,512
Goat and kidskins . . .	11,992	5,932	6,889	7,165	7,341
Sheep and lambskins . .	12,055	10,663	11,003	10,815	11,417

**Leather.** In seeking better definitions of quality and predictions of serviceability, leather technologists throughout the world are depicting clearer relationships between chemical composition, physical state, and fibre structure of leather and its strength, water resistance, wear and comfort. A novel "walking research," started in England, will include study of foot temperature while walking. Machine tests in America indicate that there may be 100% wear-variation in sole leather from even the best part of the hide.

The search continues for bookbinding, upholstery, belting, and bag leathers resistant to rot from acids absorbed from the air. Leathers entirely or partly chrome tanned are more permanent than vegetable tanned leathers. Longer lasting leathers can be

THE THREE MAIN BUILDINGS of the League of Nations are situated on a Mount of Honour; the Assembly in the centre, the Library at the right, the Council at the left and extending left from the Council, the Secretariat





obtained by addition of sodium chloride, lactate, or citrate, which serve as protective agents. In England protected leathers may be stamped accordingly.

Shortage of staple supplies has stimulated development of other sources of hides and skins. Russia is intensively studying the variety of leathers that might be made from domestic hogskins. Japan and Germany have enlarged facilities for collecting and tanning sharkskins.

A German method is claimed for making new leathers for gloves, shoe uppers, and upholstery from skins of codfish, catfish, salmon and blue-fish.

The new process for curing hides and skins with salt-saturated absorbent paper has been found to require the addition of an antiseptic. The mixing of zinc oxide or peroxide with salt has been proposed as highly effective for curing hides and skins.

Owing to continuous spread of the industry since the World War, the present 1937, world production of leather is about 25% more than in pre-war years. Except for the depression years, international trade has been well maintained because of increased consumption.

The leading export countries in 1936 according to dollar value at the exchange rate of Dec. 31, 1936 were: Belgium, \$30,895,583; Germany, \$23,548,850; the United Kingdom, \$18,024,610; United States, \$16,394,000; France, \$6,136,427.

(R. W. F.; J. G. S.)

**Lebanon:** see SYRIA AND LEBANON.

**Leeward Islands,** a loosely federated British West Indian colony, with local autonomy in its several units (Antigua, St. Kitts-Nevis, Dominica, Montserrat, and thirty-two of the Virgin Islands); language, English; capital, St. John (Antigua); governor: Sir Gordon J. Lethem. The area is 680 square miles. Population (official estimate, 1936), 139,694 with about 98% negroes and mulattos. The chief cities are: St. John, 10,000; Roseau (Dominica), 8,000; Basseterre (St. Kitts), 8,000. The Government is administered by a governor and council.

The new constitution for the colony, approved in 1936, went into effect in 1937. On April 6, 1937, it was officially announced that preparations were being made to transfer administration of Dominica from the Leeward Islands to the Windward Islands. Steamer communication, with air service from Antigua, is maintained with the outside.

Imports (£656,985 in 1936) principally foodstuffs and manufactured articles, are chiefly from the British Empire, with Great Britain (42%), Canada (20%), and the United States (16%). Exports (£629,200 in 1936), of which sugar comprises 70%, are over 90% to the British Empire (Great Britain, 52%; Canada, 32%). The principal product is sugar, with some cotton, and tropical fruits. The monetary unit is the pound sterling.

(L. W. BE.)

**Legislation, Congressional:** see CONGRESSIONAL LEGISLATION.

**Legouis, Emile** (1861-1937), D.Litt., French literary critic; born at Honfleur, Oct. 31. He held the professorship of English at the Sorbonne from 1904 till 1932. In Dec. 1932 the past and present professors of English at the British and Irish universities signed and presented to Legouis an address of admiration and gratitude for his outstanding services as interpreter of English literature to the British, hardly less than to the French, public. In 1926 he published an English translation of his *Histoire de la littérature Anglaise*, and in 1934

*A Short History of English Literature*. His last completed work was a translation of *The Winter's Tale* into French blank verse. He died Oct. 16, 1937. A short biographical notice appears in the *Encyclopædia Britannica*, vol. 13, p. 880.

**Lehmann, Ernst August** (1886-1937), German dirigible expert, died at Lakewood, N. J., May 7, 1937, as a result of burns received from the fire which wrecked the dirigible Hindenburg. He had commanded the ship the previous year and was making the first trip of the 1937 season in an advisory capacity to Captain Max Pruss. Born at Ludwigshafen, March 12, 1886, his experience with lighter-than-air craft dated from his graduation from engineering school in 1912. For two years he served as a pilot of commercial craft and after the declaration of war worked to develop the dirigible as a practical instrument of war. He played a prominent part in the air raids on London and received the Iron Cross for his service in directing 1,075 flights. Following the war, he devoted his attention to developing commercial ships. In 1928 he became commander of the Graf Zeppelin, serving until he assumed charge of the Hindenburg in 1936. He was recognized internationally as an authority on lighter-than-air flying.

**Leland Stanford Junior University:** see STANFORD UNIVERSITY.

**Lemieux, Rodolphe** (1866-1937), Canadian statesman; born at Montreal, Nov. 1. He was educated at Nicolet and Laval university, and graduated in law, becoming a K.C. in 1897. He was solicitor-general of Canada 1904-06; postmaster-general 1906-11; minister of marine 1911; speaker of the Canadian house of commons, 1922-30. In 1930 he became a member of the Canadian senate. He died Sept. 28.

**Lemons and Limes.** A good winter crop of lemons was reported for the 1937-38 season in Italy, one of the leading producers, but as an unfavourable demand for Italian lemons retarded the marketing of the summer crop into the autumn it is considered probable that much of the crop will go into the production of lemon oil, citric acid and lemon juice. A plant disease known as "mal secco" has caused some damage to Italian lemons.

California production of lemons in 1936-37 was 8,550,000 boxes, compared to 8,102,000 boxes the previous season and a five-year average of 7,208,000 boxes. In New South Wales the crop was 324,000 boxes, an increase over the six-year average of 301,450 boxes. Exports of lemons from Palestine were 81,000 boxes. Egypt, which prior to 1931 exported practically no citrus fruits has more recently become a producer for the European trade, principally with exports to the United Kingdom and the Netherlands. Egypt is marketing chiefly oranges, mandarins and sweet lemons, although increasing its exports of sour lemons which were about one-fourth those of Palestine.

Production of limes in Florida the past season was 110,000 boxes, as against 45,000 boxes the previous year and a five-year average of 8,000 boxes, the U.S. Department of Agriculture reports. U.S. imports of limes in 1936-37 were reported by the Department of Agriculture as 11,638,000 lbs., valued at \$318,000 and compared to 9,824,000 lbs., valued at \$274,000, the preceding season.

(S. O. R.)

**Leningrad.** The second city in the U.S.S.R.; pop. (1935) 2,739,800. Founded by Peter the Great in 1703 at St. Petersburg, it was the capital of Russia until 1924. It is now the centre of the Leningrad Province (which is divided into two



parts by the Karelian A.S.S.R.), is an important industrial place with over a half-million factory hands, and holds first place in the machine-building industry in the Union. It also has ship-building, metallurgy, chemical, electro-technical, textile, clothing, food, and printing industries. Its importance as a port (especially for timber export) has been enhanced by the newly built canals (White Sea-Baltic canal, 1933, and Moscow-Volga canal, 1937).

Industrial plants apart, its cultural amenities give Leningrad the rank of the second city in the Soviet Union. In 1936, it possessed 65 museums, 56 libraries, 39 theatres, 53 cinemas, 58 higher educational institutions, 40 Rabfaks, 102 technical colleges, and 180 research institutes. (S. YAK.)

**Leopold III** (1901— ), King of the Belgians, succeeded his father, Albert I, on Feb. 17, 1934; married, Nov. 4, 1926, Princess Astrid of Sweden, who died, as the result of a motor accident in Switzerland, Aug. 29, 1935. King Leopold was educated at Eton, where he was a fellow-pupil with the Duke of Gloucester, and served in the field towards the end of the World War. He visited London twice during 1937—privately in March, when he discussed his country's foreign policy with British ministers, and on a State visit in November. During the former visit he was made Colonel-in-Chief of the 5th Royal Inniskilling Dragoon Guards, an honorary Colonelcy which his father had held before him. In February King Leopold was visited in Brussels by the King of Sweden. On July 21 he wrote to his premier, M. Van Zeeland, suggesting that an independent permanent and universal organization of economic studies be formed to assist in the solution of world problems, and at his London visit in November, in a speech made at the Guildhall in reply to an address of welcome, he again manifested his preoccupation with the world's economic difficulties. (See also BELGIUM.)

**Leprosy.** Investigations of the geographical distribution of leprosy and of the degree to which it prevails in peoples of varied social customs, food habits and concepts of it have been extended in 1937, and have included countries and localities in Africa, South America and Oceania. Surveys in Nigeria led to an estimate of the presence of 200,000 cases, or about one per cent of the population. In Colombia the incidence remains entirely unknown.

The Nigerian leaders regard patients with paralyses, contractures and mutilations which are sequelae of more active processes, as those among whom restrictive measures should be practised, and they are relatively uninterested in those stages of the disease in which it is probably more readily communicable. In Colombia an asylum and care afforded the leprosy by governmental institutions are surreptitiously shared by the non-leprosy. These concepts may be contrasted with the mandatory segregation of all recognized cases in Australia and portions of the United States of America.

Juvenile leprosy has been subjected to further study because of its importance in the determination of local sources of infection, the minimal periods which occur between the probable invasion of the body by the virus and the development of the disease in a clinical form, and the evolution of the disease after the initial infection. Re-examinations of children in Ceylon examined two and four years previously contributed further to the observation that the infection of children before the age of puberty may remain latent for years, or may become spontaneously arrested and leave few or no residual effects.

The frequency of occurrence of "leprides" among patients in China, India, Japan and Africa has interested students who are endeavouring to classify these lesions of the skin by clinical and histological criteria, and to determine their genesis and signifi-

cance in the type and course of the disease with especial reference to their relation to the resistance or immunity of the patient, and the effect of environment upon their development. Their resemblance to lesions occurring in the skin of tuberculous individuals, and the apparent absence or scarcity of specific bacteria demonstrable by modern technique may be regarded as their distinguishing characteristics.

These lesions, and other analogies with infections of man and the lower animals by bacteria which resemble that of leprosy in morphology and staining characteristics, have renewed comparative histological and clinical researches into tuberculosis, rat-leprosy, para-leprosy of cattle, lepra bubalorum (buffaloes) and nodular subcutaneous tuberculosis of cattle.

Likewise, comparisons are being made with lupus erythematosus, sarcoid, von Recklinghausen's disease and other conditions in which the cellular or architectural changes of the tissues are analogous to those occurring in leprosy.

Modern bacteriological methods which have been applied in the study of tuberculosis are being tried in both efforts to cultivate the bacterium of leprosy in laboratories, and to determine the identity or causal relation of the numerous strains of bacteria which have been isolated from leprosy materials. Bio-chemical procedures are being applied to the isolation and reactions of the proteins of these various organisms; and the products obtained by these chemical extractions are being introduced into the skin of leprosy patients to learn whether they produce swelling and redness at the site of injection such as that which occurs in tuberculosis patients when tuberculin or other extracts of the tubercle bacillus are injected. Similar extracts are also being investigated for the purpose of making a diagnosis of leprosy in early stages previous to the development of frank clinical evidence, and to determine whether the disease processes have become inactive.

Diagnosis by serological tests made with reagents derived from bacteria resembling that of leprosy has been reported as successful, but this has not yet been adequately confirmed by other investigators.

Additional serological tests and reactions are being developed for diagnostic purposes, and those previously made are receiving further study. The observation that the blood serum of many patients who have leprosy in advanced stages, but who do not have syphilis, will react with positive results in serological tests for syphilis has had further corroboration.

Emphasis is again directed to the education of the people with regard to the communicability of the disease, as a means of preventing its dissemination among them when conditions are favourable to its development. However, segregation of the sick in institutions by governmental mandate is regarded by some as ineffective, and its discontinuance as a preventive measure is the subject of active discussion. The rôle of poor economic status, and the attendant inadequate food and unsanitary social practices are again brought forward as handicaps to preventive and therapeutic efforts.

Specific therapy has received further consideration, but has been characterized for the most part by modifications of methods and drugs previously used. (N. E. W.)

**Lettuce.** Production of lettuce in the U.S. for market in 1937 was 21,375,000 crates from 154,800 acres, compared to 21,355,000 crates from 165,640 ac. in 1936 and a five-year average (1928-32) of 19,163,000 crates. The total cash income for the 1937 crop was \$33,767,000 as against \$30,259,000 in 1936 and a five-year average of \$30,511,000. Yield per acre was 138 crates in 1937 and 129 crates in 1936, with a five-year average of 149 crates. The price paid per unit marketed was in 1937 exactly the same as the five-year average, \$1.59 compared to \$1.45 in 1936.



Production by States in 1937 was as follows, figures in parentheses being for 1936: California, 12,247,000 crates (14,018,000); Arizona, 4,390,000 crates (4,090,000); Washington, 860,000 crates (802,000); New York, 851,000 crates (770,000); Florida, 454,000 crates (407,000); Colorado, 470,000 crates (390,000); New Jersey, 260,000 crates (242,000); North Carolina, 84,000 crates (118,000); South Carolina, 40,000 crates (60,000); Idaho, 15,000 crates (18,000); Oregon, 20,000 crates (30,000); Virginia, 42,000 crates (32,000); New Mexico, 20,000 crates (18,000); Pennsylvania, 46,000 (39,000). (S. O. R.)

**Leviathan:** see SHIPPING, MERCHANT MARINE: *Scrapping Market*.

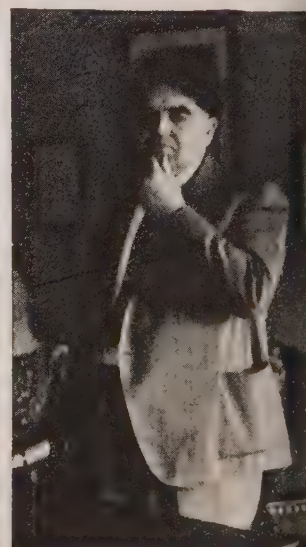
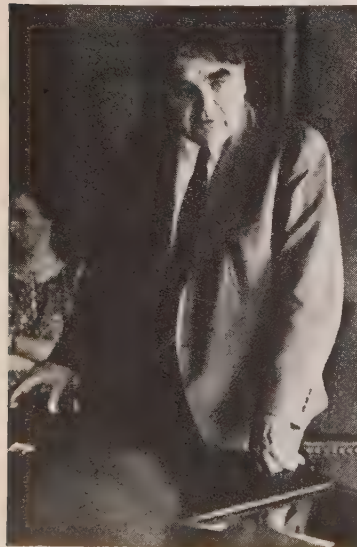
**Lewis, John Llewellyn** (1880— ), United States labour leader, was born in Lucas, Ia., Feb. 12, 1880. His first important position after local work among fellow miners was as legislative agent for the United Mine Workers in Illinois. He was so successful in this capacity that he was chosen as an American Federation of Labor organizer in 1911. He served ably in this post until 1917 when he returned to the United Mine Workers as vice-president. In 1920 he received the presidency and it was in this post that he finally assumed a dominant place in American life as leader of a movement for industrial unionism which challenges the craft union organization of the long dominant American Federation of Labor. When the Federation expelled the unions and their members affiliated with Lewis' Committee for Industrial Organization in July 1936, a labour dispute was precipitated which continued throughout 1937. During the year Lewis concentrated his effort upon expanding the membership of the Committee for Industrial Organization in order to increase its influence. He claimed to have tripled the enrolment of 1,400,000 during the year and succeeded in reaching agreements with several leading United States corporations which enabled him to expand his activities. Realizing that factional disputes were handicapping the American labour movement, Lewis and President Green of the American Federation of Labor endeavoured in the last months of the year to secure some arrangement which would permit co-operation. The year closed without such an understanding being reached, but there was no doubt that the Committee for Industrial Organization constituted an economic and political force of significant proportions.

**CHARACTERISTIC ATTITUDES** of John L. Lewis, whose Committee for Industrial Organization challenged the craft unions of the American Federation of Labor

**Liberal Party.** At the general election of Nov. 1935 the Liberal Party in England seemed to have reached its nadir as a political force. In a House of Commons of 615 members, only 54 had been returned as Liberals, and of these 33 were followers of the Government, returned with Conservative support. The remaining 21 formed a Liberal opposition under Sir Archibald Sinclair: their former leader, Sir Herbert Samuel, had lost his seat at the election, and was subsequently raised to the peerage at King George VI's coronation. Undismayed by misfortune, both sections of the Party set to work by midsummer, 1936, to consolidate their position. The Liberals of the opposition section overhauled their machinery and established a Liberal Party organization, with an annual assembly (which met for the first time at Buxton in May 1937) and an executive council; area and constituency associations being simultaneously strengthened. The Liberal national council was created as a controlling body of the section which, under Sir John Simon, co-operates with the Conservatives; a central office was opened, and branches were started in a number of constituencies. Relations between the two sections remain strained. Sir John Simon's followers contend that they leave the Government with liberal principles, and that in any case national unity, especially against the spread of Socialism and Communism, continues to be more important than subservience to old Liberal dogmas. The followers of Sir Archibald Sinclair, on the other hand, consider that their former colleagues must ultimately merge into the Conservatives; that the crisis which called for a united front has passed; and that the Government has mishandled foreign affairs and is courting catastrophe by its devotion to tariffs.

By-elections in 1937 showed an appreciable turn-over of votes in favour of opposition Liberal candidates, without any actual gain of seats. In the constituencies, except in London, there was a general revival of activity, in which the women took a prominent part, and towards the end of the year fresh interest was aroused by the rise in prices. This, argued orthodox Liberals, was the inevitable result of the Government's protectionist policy and the sole remedy both for rising costs and for unemployment was the freeing of the channels of world trade. Besides demanding, therefore, better support for the League of Nations, a juster distribution of wealth, and an electoral system which will be fair to all parties, the program of the opposition Liberals lays special stress on the general lowering of tariff walls, as a step toward allaying much of the prevailing international friction and as a potent influence for peace.

(ME.)





**Liberia**, an independent Negro republic on the west coast of Africa, bounded N.W. by Sierra Leone and in the hinterland and E. by French West Africa. Area, c. 44,000 sq.mi.; pop., from 1,500,000 to 2,000,000. The president (since 1931) is the Hon. Edwin Barclay, his term of office expiring in 1943; he is assisted by a cabinet, and there is a parliament of two chambers, both elected. The official language is English, and the national flag horizontal stripes of alternate red (6) and white (5) with, in the upper flagstaff corner, a white star on blue ground.

Liberia's principal products are palm kernels and oil, piassava, coffee, cocoa, ivory, kola nuts, and rubber, for the latter of which the American company, Firestone Plantations, has a concession in return for its development of the capital. There are no railways, and the making of roads fit for motor traffic is in its infancy, and that only in the coastal areas. Shipping entering Liberian ports during 1934 amounted to little over 1,300,000 tons, of which nearly 502,000 tons were British. Exports and imports to the United Kingdom and the United States were, respectively: exports, £7,545 and \$505,339; imports, £86,634 and \$534,639.

In 1927 a loan of \$5,000,000, of which half has been issued, was raised in the United States, but in 1931, largely on account of forced labour, bad sanitation, and backward conditions generally, the United States refused to recognize the new president. Liberia then applied to the League of Nations for financial and administrative assistance, but, after long negotiations, the Government refused the League's proposals which, in May 1934, were formally withdrawn. In June 1935, Liberia's plans for economic and social rehabilitation now being found to be acceptable, the United States granted recognition to President Barclay and his Government.

**Libraries.** It is encouraging to note, from the incomplete statistics available, that appropriations in the United States for tax-supported libraries have been increased in the past two years, that many libraries have been able to restore salaries cut during the depression, and that in a few instances salaries have been increased. The situation of libraries deriving their income wholly or in part from invested funds is less encouraging. Much, however, remains to be done to regain the ground lost from 1930 to 1935. Much must also be done by library authorities and by governing bodies to raise the general level of library salaries to a point where they are equal to those prevailing in professions (e.g. teaching) requiring a comparable standard of education and training. Although increases in book collections are again reported, the depletion of stocks because of reduced funds for purchase and replacement presents a serious problem from which it will take time to recover.

The forced economies of the depression years have led to a fresh examination of the techniques employed with the beneficial result that many routine processes have been simplified. Renewed attention has been given to various co-operative efforts. The co-operative cataloguing project, conducted at the Library of Congress since 1933 with a grant in aid from the General Education board, is continuing its important service for scholarly libraries. A board on Resources of American Libraries was established by the American Library Association in 1936 to "further and guide efforts toward the effective increase, co-ordination, geographical distribution, and use of the materials for research and education in American libraries." The development of union catalogues, surveys of book resources, and microphotographic copying of research materials, are among the subjects under consideration. Recent efforts to improve and strengthen college, junior college, and school libraries, are an indication of the significant place occupied by the library in modern education. The use of microphotography as a cheap and convenient method of reproducing ma-



THE LIBERIAN ARMY of 400 parades past the president's house in celebration of the ninetieth anniversary of the republic's independence

terials for research is being actively studied. Librarians are encouraging experimentation, investigating cameras and reading appliances, and testing the use of microfilms by readers. The close of 1936 saw the publication of the final part of Sabin's *Dictionary of books relating to America* (29 vols., 1868-1936). This great bibliography was begun by Joseph Sabin (parts 1-82, 1867-81), continued by Wilberforce Eames (parts 83-116, 1884-92), and completed by R. W. G. Vail for the Bibliographical Society of America (parts 117-172, 1927-36).

**Federal and State Aid.**—An event of great potential significance for library development was the establishment of a library service division in the U.S. Office of Education of which Ralph M. Dunbar has been appointed (Nov. 26, 1937) chief. Specialists in public and in school libraries have also been appointed. In 1936-37 the Library Extension board (American Library Association), supported by planning committees of State associations, conducted vigorous campaigns in various States for State aid for library development, particularly in rural areas. Appropriations were secured in four States: Arkansas, \$64,000; Ohio, \$150,000; Vermont, \$25,000—these three for the biennium; and Michigan, annual appropriation of \$500,000 beginning with 1938-39. Increased appropriations for State library extension agencies are generally reported.

**Library Training and Staff.**—On Jan. 5, 1937, the fiftieth anniversary of the establishment of the first training school for librarians was commemorated. In 1887 Melvil Dewey, then librarian of Columbia college, opened a School of Library Economy. Removed to Albany in 1889 as the New York State Library school when Dewey became director of the State library, the school remained there until 1926 when it was transferred to Columbia university and merged with the Library School of the New York Public Library (est. 1911) to form the present School of Library Service. The 1936-37 report of the board of education for librarianship (American Library Association) lists 26 schools of various types accredited by the board as meeting its standards; all are connected with teaching institutions. On Nov. 1, 1936, the total enrolment was 1,345, and the number of graduates for the year 1936-37, 900. A total of 18,911 persons have been graduated since 1887 from all library training schools, including those no longer in existence. In addition to scholarship funds provided by individual schools, the Carnegie Corporation continued its aid



by appropriating, 1937-38, \$10,900 for the United States and Canada. Laws providing for the certification of librarians as to education and training were passed in Georgia, Tennessee, and Virginia in 1936-37. Seven States now legally certificate librarians in municipal, county, and regional libraries. School librarians in 23 States and the District of Columbia are certificated chiefly through rulings of State departments of education.

In June 1937, the staffs of the New York Public Library, and of the Brooklyn and Queensborough public libraries were admitted to the New York State employees retirement system (effective July 1, 1937), the city agreeing to provide the funds for city-paid employees, and the trustees of the New York Public Library undertaking to make the necessary contributions for the employees of the Reference department. This is the successful culmination of years of effort to secure pensions.

**Flood Damage.**—Many libraries in the Ohio valley were damaged by the severe floods of 1937. Kentucky, estimated damage of \$300,000, and Indiana of \$64,000, were the States most seriously affected. The Louisville (Ky.) Public Library placed the damage to buildings, books, and equipment, at \$200,000.

**Library Buildings.**—The Rundel Memorial building of the Rochester (N.Y.) Public Library was opened Oct. 5, 1936. It is similar in plan to the Enoch Pratt Library, Baltimore, Md. The cost was approximately \$1,300,000, of which \$1,000,000 came from the bequest of Morton W. Rundel. The Library of Congress annex, for which roughly \$8,225,000 have been appropriated, is rapidly nearing completion and should be ready for occupancy the latter part of 1938. Although mainly for book storage, estimated capacity 10,000,000 volumes, the annex will also provide much-needed work and study space. The City of New York, late in 1937, authorized funds of \$2,000,000 for the construction of the new Brooklyn Central Library, utilizing the present foundations of the uncompleted wing that was begun over 20 years ago. The new quarters for the general library of the University of Pittsburgh were opened in May 1936, on the fourth, fifth, and sixth floors of the "cathedral of learning." A new library, cost \$230,000, was opened at the Agnes Scott college, Decatur, Ga., in the fall of 1936. In Oct. 1937, new buildings were dedicated at the University of Oregon, Eugene, at Denison university, Granville, O., at Brooklyn (N.Y.) college, and at the Rhode Island State college, Kingston.

The following libraries contain more than 1,000,000 volumes each, according to the latest available statistics: the Library of Congress, 5,395,044 vols. (June 30, 1937); the New York Public Library, 3,871,258 vols. (comprising reference department, 2,551,426 vols. and circulation department, 1,319,832 vols.) (Dec. 31, 1937); Harvard university, 3,861,438 vols. (July 1, 1937); Yale university, approximately 2,650,000 vols. (Aug. 1, 1937); Cleveland (Ohio) Public Library, 2,082,080 vols. (1936); Boston (Mass.) Public Library, 1,693,335 vols. (1936); Los Angeles (Calif.), 1,534,524 vols. (June 30, 1937); Chicago (Ill.) Public Library, 1,612,121 vols. (Dec. 31, 1936); Columbia university (New York city), approximately 1,520,000 vols. (1937); University of Chicago, approximately 1,180,000 vols. (1937); Cincinnati (Ohio) Public Library, 1,161,669 vols. (1936); Brooklyn (N.Y.) Public Library, 1,108,168 vols. (1936); University of Illinois, 1,086,212 vols. (June 30, 1937); University of California, approximately 1,000,000 vols. (1936). Such figures are very uncertain standards of comparison, because of differences in methods of counting, and because public libraries with many branches contain many copies of new and standard books.

**Librarians.**—Keyes D. Metcalf was appointed director of the Harvard University Library Sept. 1, 1937. He was succeeded as chief of the reference department of the New York Public Li-

brary by Paul North Rice, since Feb. 1, 1936, director of libraries, New York university. W. N. C. Carlton has retired from the librarianship of Williams college, Williamstown, Mass., and has been succeeded by Peyton Hurt. Carl Vitz, librarian of the Toledo (Ohio) Public Library, became librarian of the Minneapolis (Minn.) Public Library upon the retirement of Miss Gratia A. Countryman.

The deaths of the following librarians occurred during the year: Herman H. B. Meyer, Jan. 16; George H. Locke, Jan. 28; Wilberforce Eames, Dec. 6; Harry Lyman Koopman, Dec. 28.

**BIBLIOGRAPHY.**—For further information about American libraries consult: *Bulletin of the American Library Association*; *Library Journal*, New York; *Library Quarterly*, Chicago. Important contributions to library literature were: W. M. Randall and F. L. D. Goodrich, *Principles of College Library Administration* (Chicago, 1936); M. L. Raney, ed., *Microphotography for Libraries* (Chicago, 1936), and *Microphotography for Libraries, 1937* (Chicago, 1937); Elva Smith, *The History of Children's Literature* (Chicago, 1937); L. R. Wilson, comp., *Library Trends* (Chicago, 1937). (C. F. McC.)

**Great Britain and Europe.**—Epoch-making developments have been, and still are, going on in British libraries, in the form of new buildings, large extensions, and modernization of equipment. At the British Museum, reconstructive work has already resulted in what is practically a new North Library, now available to those consulting mss., incunabula, and similar precious material. Hard by, the great tower of the University of London is all but finished, occupied chiefly by a colossal book-stack and three magnificent reading-halls. Half the stock of more than 300,000 books has now been transferred there from South Kensington. Reconstruction at the Bodleian has given readers a renovated Arts End. Similar progress is going on at Cambridge. The new Brotherton Library at Leeds, the new Arts Library at Manchester, and the building going up at Liverpool, are great acquisitions for what may be termed the provincial universities. The stately building for the National Library of Wales was opened in July, and the plans have been approved for the National Library of Scotland. On the Continent, the League of Nations Library is the nearest parallel, though extensive alterations are contemplated or in progress in a number of places.

The most recently available particulars regarding some of the leading British and European libraries are as follows: British Museum, 4,450,000 books, 200,000 mss. Patent Office, 282,000 vols. Admiralty, 100,000. War Office, 130,000. Board of Education, 80,000. House of Commons, 80,000. House of Lords, 55,000. Foreign Office, 75,000. Board of Trade, 56,000. India Office, 200,000, and 20,000 mss. National Art Library, 200,000 and 250,000 photos, etc. Natural History Museum, 200,000. Science Museum, 250,000, including 113,000 periodicals. London university, 310,000, including the Goldsmiths' library of economic literature, 60,000. Note also the libraries of University college, 365,000, King's, 86,000, London School of Economics, 750,000, and the Institute of Historical Research, 48,000. The law libraries of the Inns of Court, 60,000; Lincoln's Inn, 70,000; Inner Temple, 85,000; Middle Temple, 70,000. The Royal Society, 120,000. Athenaeum, 80,000. National Liberal Club, 35,000, and 40,000 pamphlets. Royal Institution, 65,000. The London Library, 450,000, is the foremost subscription library. Among the most important public libraries is the Guildhall, 122,000, and 20,500 mss. Among the special libraries may be mentioned those of the Royal Society of Medicine, 150,000; Royal College of Surgeons, 80,000; Society of Antiquaries, 100,000; Warburg Institute, 85,000, and 45,000 photos; Royal Asiatic Society, 45,000, and 1,500 mss.; Linnean Society, 55,000; Geological Society, 55,000; Zoological Society, 35,000; Chemical Society, 40,000; Royal Empire Society, 250,000. (See R. A. Rye, *Libraries of London 1910*; *Minerva*, 1937; *Libraries, Museums, and Art Galleries*, 1937.)





THE REFERENCE LIBRARY at the British Museum, which draws students from all parts of the world

At Oxford, the Bodleian Library has over 1,500,000 books and 40,000 mss., and the Tylor Library 120,000 vols. The chief libraries at Cambridge are the University Library, with about 1,500,000 books, 10,000 mss., and 200,000 maps, and Trinity College, with 120,000 books and 1,600 mss. The Mitchell Library, Glasgow, has 200,000 vols. The John Rylands Library, Manchester, contains the Althorp collection of early printed books (115,000).

The National Central Library co-ordinates the services in England and Wales, with a Scottish and an Irish Central Library for those regions. It makes accessible to readers in any place some 21 million books, and also has an international service.

The *Bibliothèque Nationale*, Paris, has 4,000,000 printed books, 500,000 mss., and 20,000 periodicals. Other French libraries include the *Bibliothèque de l'Arsenal*, 1,000,000, and 12,500 mss.; *Bibliothèque Mazarine*, 350,000, and 48,000 mss.; *Bibliothèque Ste.-Geneviève*, 700,000, and 4,000 mss., and 20,000 prints; the library of the *Senate*, 250,000, and 1,300 mss.; the *University*, 1,000,000 with 1,590 mss. and 130,000 theses; *l'École normale supérieure*, 450,000; *Musée d'Histoire naturelle*, 350,000, with 1,130 mss., and 30,000 other items; *l'Institut*, 700,000; *Bibliothèque historique de la Ville de Paris*, 300,000, with 2,000 mss.

and 19,000 maps. The wealth of the French provincial libraries, and of the capital and provincial libraries of Germany, Italy, Belgium, and the majority of the other European countries, may be judged when it is said that the number of such libraries comparable to, or even richer than, many of those already mentioned is too great to be included in this brief survey. (E. A. BA.)

**Library Association.** The Library Association, founded 1877 as the Library Association of the United Kingdom, incorporated by royal charter 1898, is the representative body for libraries and librarians throughout the British Commonwealth of Nations. Its objects are, to unite all interested by holding conferences for the discussion of bibliographical and kindred questions, to promote the better administration of libraries, to promote the status and qualifications of librarians, to watch and contribute to library legislation, and to hold examinations in librarianship. Its headquarters are at Chaucer House, London, and it has a number of branches, such as the Northern Ireland and the Scottish Library Associations, and special sections such as that dealing with university and research libraries. Total membership, 5,350. Its professional regis-



ter comprises 845 fellows and 734 associates. About one-fourth of the members hold university qualifications, these being chiefly from the State, university, and other learned libraries. The annual conference is held during a week in June, at various centres, and meetings for papers and discussion take place in the winter months. Professional examinations have been held annually since 1896, and certificates awarded. The association runs correspondence classes and organizes summer schools. It was instrumental in the establishment of the University of London School of Librarianship in 1919. *The Library Association Record* is the official organ, that for 1937 is the 39th volume. Among many invaluable textbooks and tools, it publishes *The Subject Index to Periodicals* annually, and *Reference Books*, a classified guide, with supplements. There is an information bureau at Chaucer House. See also *The Library Association Year-Book*, 1929 continued. For The Library Association of the United States, see AMERICAN LIBRARY ASSOCIATION. (E. A. BA.)

**Libya,** a large but mainly desert Italian colony in N. Africa, bounded N. by the Mediterranean, W. by Tunis and Algeria, S. by the French and the Anglo-Egyptian Sudan, and E. by Egypt. Divided into the four provinces of Tripoli, Misurata, Bengazi, and Derna, with a military territory in the south, the estimated area is about 400,000 sq.mi. (excluding a partially surveyed hinterland of over 200,000 sq.mi.), with a population (1931) of 728,000, of whom about 45,000 were Italians.

The governor, Marshal Balbo, succeeded Marshal Badoglio in 1933; his functions are administrative only, the legislative power being reserved to Rome and the Italian courts having final jurisdiction. Italian and Arabic are the official languages; Arabic is generally spoken, and the natives are mainly Mohammedan. The chief towns (others being mere caravan centres) are the ports of Tripoli (pop. 95,000), in the W., Homs (31,000), Misurata (43,000), and Bengazi (44,000); the latter port is in course of reconstruction at a cost of 12,000,000 lire.

**History.**—A decree of Jan. 1937 ordering Jewish shop-keepers to open their shops on Saturdays and close them on Sundays was

widely resisted and led to much persecution of the Jews; in March Mussolini paid an official visit to the country, where he opened the 1,200mi. coast road connecting the Egyptian and Tunisian frontiers, reviewed the Italian navy, which was concentrated at Tripoli, and proclaimed himself "Protector of Islam." On April 10, from Rome, Mussolini announced a new constitution under which Libya was to be an independent military and naval unit of Italy's African empire, Libyan agriculture was to be subsidized, 24,000,000 lire were to be spent on housing in the African colonies generally, and the Muslim community was to have further privileges. In September and October the garrison was reinforced by over 1,200 men.

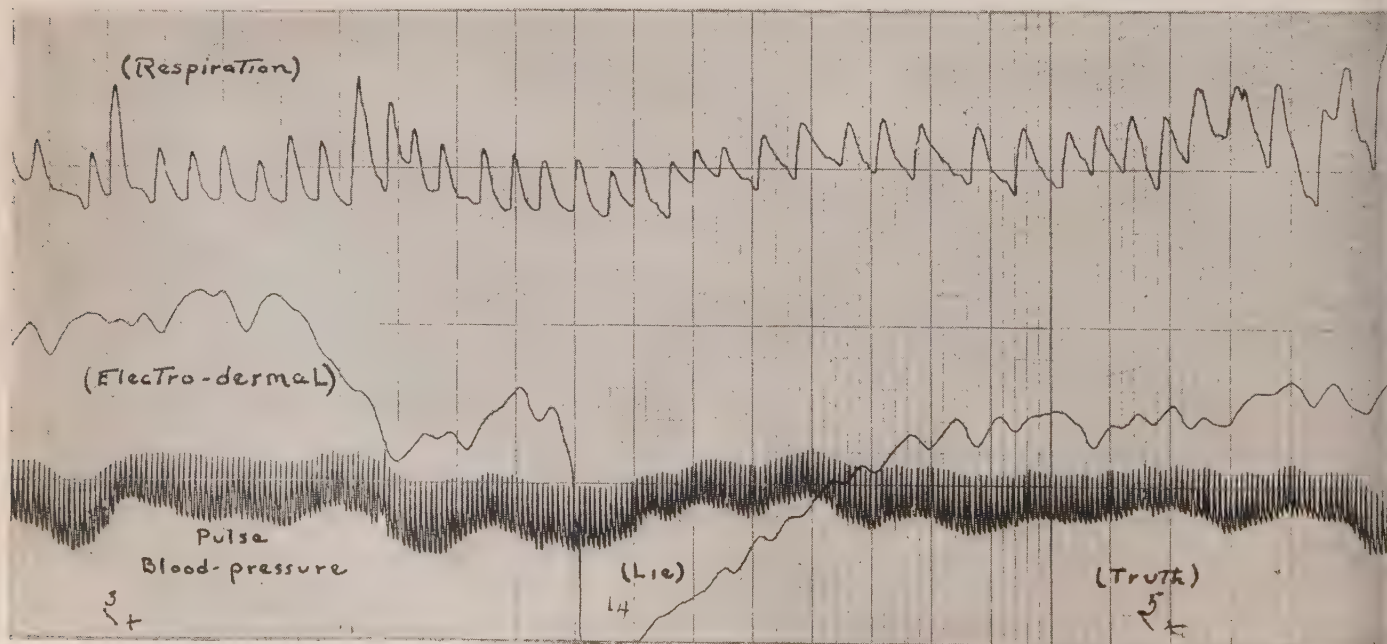
**Trade and Communications.**—Agriculture and stock-raising (sheep, goats, cattle, camels) are the chief industries, and on the coast sponge and tunny fishing are prosperous. Cereals, with the olive, vine, mulberry, and other fruits are grown in the steppe country, the oases produce dates, oranges, etc., in plenty, and tobacco growing and manufacture is now a flourishing industry. Imports in 1935 were valued at 398,154,000 lire, and exports at 61,161,000. The budget estimates for 1935-36 were: revenue (including State contribution 291,800,000 lire), 420,704,000 lire; expenditure balanced at that figure. The official currency is the Italian, but English and French money is also in use.

Libya has about 270mi. of railway, an extensive system of caravan tracks, and, including the new coast road, about 4,000mi. of road fit for motoring. Telephone communication is good; and there is a daily air-service between Tripoli and Rome.

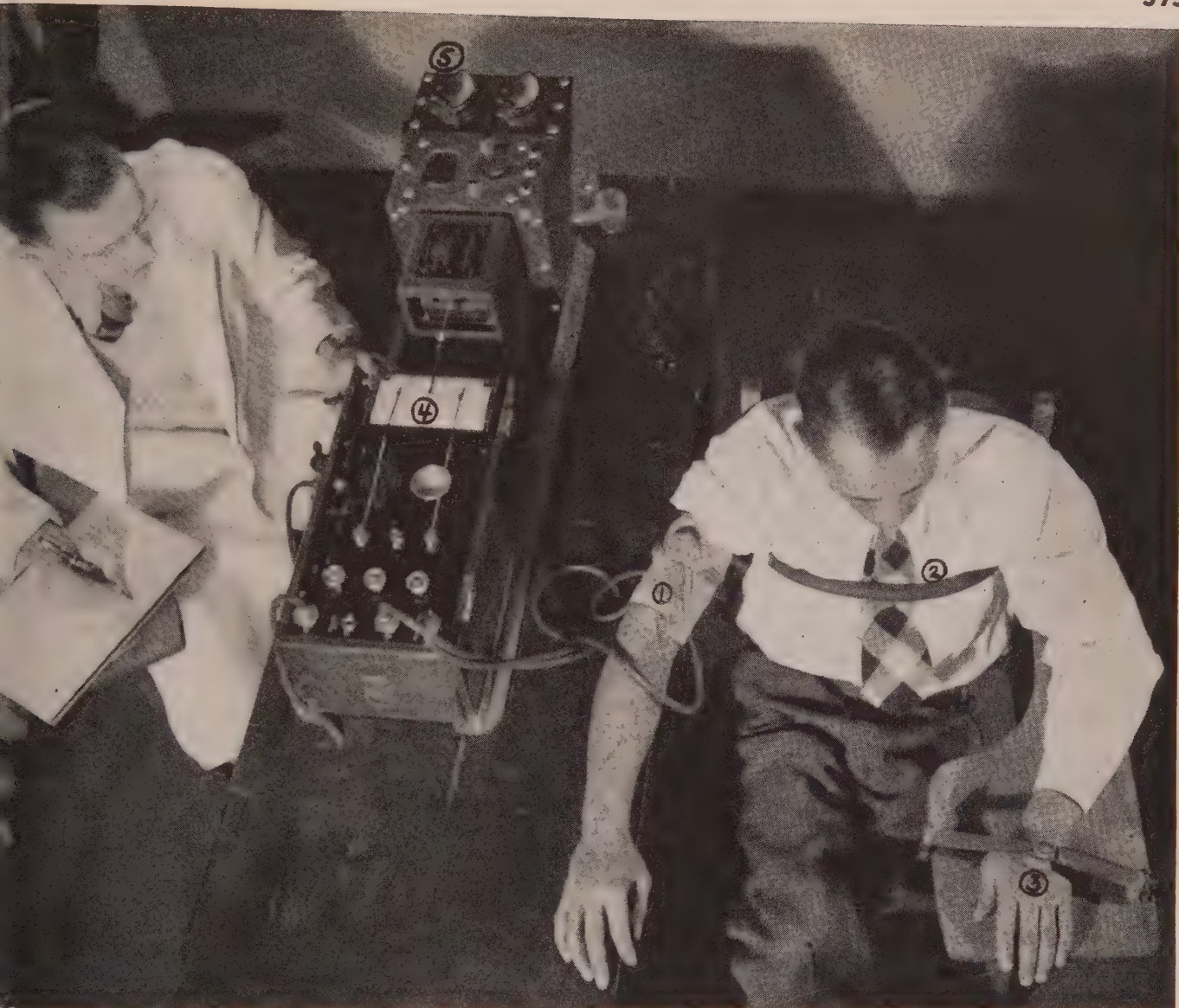
**Liechtenstein,** independent State, Europe, N.E. of Switzerland (customs and postal alliance). Capital, Vaduz. Ruler, Prince Francis I (born 1853; succeeded 1929); administrator, Dr. Joseph Hoop (1928); Diet (15). Area, 65 sq.mi.; population, 10,213 (nine-tenths Catholic), mainly agricultural (cattle). Products: corn, wine, fruit, wood, marble. Currency, Swiss franc. (H. Fw.)

**Lie Detector.** Throughout the centuries many methods have been employed in an effort to detect deception or innocence and guilt. Since 1900 Lombroso, Benussi, Burt, Marston, Larson, Keeler and others have experimented with psycho-physiological techniques for detecting deception; recently 12 law-enforcement agencies have acquired instruments to be

POLYGRAM OF SUSPECT lying regarding stolen merchandise. Note following responses to question No. 4: 1. Shift in respiratory base line followed by increase in amplitude at irrelevant question (No. 5). 2. Drop in electro-dermal curve indicating decrease in skin resistance and other electro-dermal responses. 3. Rise in blood pressure curve followed by fall after irrelevant question (No. 5).







SUBJECT UNDERGOING DECEPTION TEST on lie detector. 1. Blood-pressure cuff. 2. Pneumograph contact. 3. Electro-dermal electrodes. 4. Pneumo-cardiograph unit, which records breathing, pulse and blood pressure. 5. Galvanometer unit, which indicates if the test is, literally, making the subject sweat

used as "lie-detectors." Staff members of the Scientific Crime Detection Laboratory of Northwestern university have used these techniques to examine approximately 5,000 individuals regarding criminal acts, and dishonesty in financial and business institutions. A number of corporations have adopted the same procedure in the examination of applicants seeking positions, and recently two municipalities have incorporated it in their police applicant examination routine.

Deception tests are, in general, based on the theory that bodily changes accompany emotion; thus through the continuous and simultaneous recording of certain voluntary and involuntary bodily functions graduated variations in emotional tone can be obtained, and responses to one stimulus may be compared with responses to another. In the technique now most generally employed a number of recording units are combined into a single apparatus. A cardio-sphygmograph records the pulse rhythm and variations in blood pressure, the galvanograph records electro-dermal responses (which closely follow sweat gland activity) and the pneumograph records respiratory movements. The whole is commonly referred to as a Polygraph.

The entire test procedure is carefully controlled so that fear of

the innocent and environmental factors will not interfere with the obtaining of specific responses to relevant questions which are indicative of deception. After control Polygrams of a given individual have been obtained, the subsequent test procedure depends upon the nature of the problem at hand and upon the experiences that the individual being examined has undergone during the investigation preceding the deception tests. (See also CRIME; FEDERAL BUREAU OF INVESTIGATION; RACKETEERING.)

(L. KE.)

**Life Insurance.** During the year 1937 life insurance companies of the United States and Canada continued their progress towards recovery from the effects of the depression. The estimated new business for the year of \$16,000,000,000 is still short of the \$21,000,000,000 for each of the years 1929 and 1930. The total amount of life insurance in force at the end of the year was expected to reach \$115,000,000,000 or more than \$2,000,000,000 in excess of the highest on record during 1930. Since 1930, assets have increased from approximately \$20,000,000,000 to \$28,000,000,000. The premium income of \$3,850,000,000 for 1937 will be greater by more than \$100,000,000 than during 1930. The income from all sources during 1937 will amount to \$5,700,000,000. These are necessarily estimates. The mortality experience of the year was favourable.



The problem of the investment of funds continued to present a serious difficulty. As a result of the limited avenue of investment in other fields, the funds of life insurance companies invested in U.S. government bonds have increased greatly—more than tenfold during the past five years. The rate of interest obtainable continued low during the year. The recession in the security market occurring during the last weeks of the year, affecting non-amortizable securities, is expected to decrease the amount of contingency reserves and surpluses of many companies.

A corollary to the difficulty of obtaining good returns on investments was the large sums of money received by life insurance companies for annuities and single premium policies. In 1930 the amount received for annuities by life insurance companies in the United States and Canada was about \$100,000,000 as compared with over \$450,000,000 in 1936. The amount is likely to be somewhat less for 1937.

The low interest rates obtainable on investments during the past few years have been accompanied by an increase in the amount of insurance moneys left with the company under settlement agreements after the death of the insured or on maturity of the policy. During the past six years, the amount of these proceeds of policies has increased from approximately \$300,000,000 to about \$1,000,000,000, excluding supplementary contracts involving life annuities. During 1937, most of the leading companies placed restrictions on the granting of complicated settlement agreements and also on agreements which might extend for too long a time into the future.

The decision of the U.S. Supreme Court declaring the Social Security Act constitutional has called attention to the need of providing pensions in old age for those who are not covered by that Act while those who are covered may realize the need of supplementing future Government payments through insurance companies. In Canada, the decision of the Supreme Court declaring the social legislation under dominion auspices unconstitutional was upheld by the British Privy Council on appeal.

A legal case of importance was decided by the New York Court of Appeals, the highest tribunal in the State, in which the court approved the practice of an insurance company taking into account its disability experience in apportioning dividends under life insurance policies with disability benefits. An important action was taken by industrial life insurance companies in liberalizing their policies, the chief change being the granting of non-forfeiture values for policies which lapsed after the payment of premiums for six months instead of three years as heretofore.

**Great Britain and Ireland.**—With regard to Great Britain, the year proved to be a satisfactory one. Life insurance companies will probably have placed on the books about £428,000,000 as compared with £408,000,000 in 1936. The insurance in force at the end of the year for British companies is estimated to exceed £3,400,000,000. At the beginning of 1937, the total assets of all of the life insurance companies domiciled in the United Kingdom amounted to almost £1,250,000,000. The premium income during the year 1936 (the last year for which such figures are available) amounted to over £150,000,000, while the total income for that year, including investment income, equalled £205,000,000. The year witnessed an increase in group life insurance and annuity plans, in spite of increases in annuity rates during recent years. The average rate of interest has been decreasing in recent years, but is in excess of that earned by American companies in the last year or two. The mortality rate in England also continues to be favourable.

A policy holder in Great Britain is entitled to an income tax rebate on premiums on a policy providing insurance on his own life or that of his wife up to a maximum limit of one-sixth of his income. This concession encourages the insuring public to pur-

chase high premium policies. It may be noted that 75% of the new business is under endowment insurances against approximately one-half of that proportion in the U. S. and Canada.

A significant event of the past year is the withdrawal from the Irish Free State of several British companies with respect to their life business. This is principally due to a law compelling companies doing a combined life, fire and casualty business to confine themselves either to life insurance only or to other lines of coverage. (See also INSURANCE, ACCIDENT AND AUTOMOBILE.)

(A. Hu.)

**Lime.** The popular conception of lime is primarily as a building material, but this is not the case; of the approximately 4,000,000 short tons normally produced in the United States, only about one-quarter is now used in the building industry, and even in pre-depression days, when building was much more extensive, the proportion was well under one-half. Agriculture uses 8 to 10%, and the remainder is divided roughly in the proportion of one-half to chemical, one-quarter each to metallurgical and refractory uses. Of the total sales, about one-third is as hydrated lime and two-thirds quicklime. In Canada production dropped from 674,100 short tons in 1929 to 320,700 tons in 1932, increasing to 405,400 tons in 1935 and 473,300 tons in 1936. Production of lime in Great Britain reached 1,428,000 tons valued at £1,272,000 in 1935 according to the quinquennial census of production by the board of trade. Of this output, but 88,000 tons valued at £160,000 was hydrated.

(G. A. Ro.)

**Limes:** see LEMONS AND LIMES.

**Linen and Flax.** A study of the linen industry during 1937 reveals a sharp transition from the almost boomlike conditions of the first six months to the poor trade which characterized most of the second half of the year. This setback was occasioned by the growing gap between flax and cotton values, the virtual loss of the China market, and disappointing American buying.

The most interesting mechanical development of the year was the introduction of the Eves highspeed drawing frame, whose productive possibilities are remarkable, in that a single-headed first drawing frame will produce 29 miles of sliver per day from a single delivery. The (British) Linen Industry Research Association made further headway in producing new strains of pedigree seed and in developing machinery to decorticate green straw. Continental inventors designed improved flax-production equipment. The latest Soenen flax-pulling machine, which weighs only five cwt., will pull seven acres in one day, attended only by a driver and two youths. There was a considerable extension of the use of hydrogen peroxide in yarn bleaching, and the problems of cheese bleaching were the subject of much investigation.

Linen manufacture does not lend itself easily to mass production, but today strenuous efforts are being made to speed up machinery and cut out unnecessary processes. Cheese winding, for example, has been substituted for reeling and bundling in the case of fine warps. The automatic linen loom is still in the experimental stage; flax is much less tractable than cotton fibre, and, owing to their lack of elasticity, linen yarns need special consideration during manufacturing processes, though their strength should prove a valuable asset for maintenance of continuous production with automatic machinery.

**World Production and Trade.**—The U.S.S.R. remains the world's principal producer and exporter of flax, controlling approximately 80% of the world's (fibre) flax area, and in 1936 produced 5,300,000 centners of flax against 3,300,000 centners in 1913. Acreage was again increased in 1937, but the declared pol-



icy is to reduce fibre exports gradually, in order to cater for the Soviet linen industry, which is growing apace. Germany and Latvia also increased their acreage in 1937, the former to 150,000, while the Belgian and Irish acreage declined to 70,710 and 24,100 acres respectively. The British Empire flax resources now yield barely 5% of the raw material required for linen manufacture, and imports into the United Kingdom have risen from 41,000 tons in 1930 to 66,000 in 1936, drawn mainly from the U.S.S.R., Belgium, and the Baltic States.

Soviet Russia, Germany, and Latvia also increased their consumption of fibre (flax) in 1937, the U.S.S.R.'s 1937 plan calling for 300,000,000 metres of linen fabrics as compared with 285,500,000 in 1936. The United Kingdom, which is still by far the world's largest flax importer and linen exporter, exported linen goods to the value of £7,145,481 in 1936 as against similar exports worth £10,018,626 in 1926. Exports in the first 11 months of 1937 totalled £7,188,017, as against £6,491,106 in the corresponding period of the preceding year. Approximately 45% of the entire United Kingdom linen output is said to cover home demand, but probably half of this goes to shipping houses and finds its way to every corner of the globe.

The United States is the leading market for linens, and 90% of its imports of fine linen weighing less than 4 ozs. per square yard comes from the United Kingdom, from which the imports of linen piece goods, damask, and handkerchiefs for the first 11 months of 1937 amounted to £1,949,768. There were also considerable quantities of linen yarn for threadmaking. Normally China is the leading exporter to the U.S. of embroidery linens, this being an interesting example of a triangular industry in which Northern Ireland provides the piece goods, China the workmanship, and the United States the finished article and a ready market.

Leading linen-exporting countries (in order of importance): United Kingdom, Belgium, Czechoslovakia, U.S.S.R., France.

Leading linen-importing countries (in order of importance): U.S., Australia, Canada, Central and South America, South Africa, China. (C. R. C.)

## Linlithgow, Victor Alexander John Hope,

2ND MARQUESS OF (1887— ), K.T., G.M.S.I., G.M.I.E., viceroy of India, was educated at Eton. He succeeded to the marquessate in 1908, from 1922 to 1924 he was civil lord of the admiralty, and was chairman of the Royal Commission on Indian Agriculture, 1926-28, and of the Joint Select Committee on Indian Constitutional Reform in 1933, succeeding Lord Willingdon as viceroy in April 1936. In Jan. 1937, he made a tour in Burma of some duration. Later in the year, he delivered an important message to British India, dealing with the intentions of the Home Government on constitutional matters. The native press called for a meeting between Lord Linlithgow and Gandhi, whom the viceroy, by a gesture interpreted as one of goodwill towards the Congress Party, invited to visit him at Delhi. The meeting took place in August (see GANDHI).

Lippe-Biesterfeld, Prince of: see JULIANA.

Liquor: see SPIRITS.

**Liquor Laws** and liquor control in the United States since repeal of national Prohibition are still in an experimental stage. A summary of legislation in 1934 shows that the licence plan was used in 17 States and the District of Columbia and the authority plan in 12 States is typical of 1937. Both plans have been extended and one or the other or some combination of the two covers all the States.

Reports at the National Conference of State Liquor Administrators, Mackinac Island, Mich., in July, showed increasing desire for interstate and intergovernmental co-operation, and larger use of State stores combined with licences, a tendency toward State monopoly, at least in wholesale distribution.

In 1937 Alabama became the 43rd wet State, voting approval of legal liquor, and legislation elsewhere that year took the last five States out of the "bone-dry" class. Georgia and Oklahoma have no control authority, but legalize sale of beer and light wines, as do Kansas and Mississippi.

Local option was extended and in 1937 elections dry areas were increased in 15 and decreased in 8 States. Under the North Carolina 1937 act to unify liquor control under a State A.B.C. (Alcohol Beverage Control), 27 counties voted for county A.B.C.'s and 11 against liquor.

Liquor taxation, still a dominant issue in liquor policy, largely determines the extent and effectiveness of control. Where greed for revenue outweighs reform of liquor traffic, bootlegging (*q.v.*) defeats both. Liquor tax laws, 93 in number, were enacted in 18 States in 1937, and mostly imposed new taxes or increased rates. Retaliatory taxes between the States and discriminatory legislation are growing and constitute an ill-omen that may require the exercise of Federal powers under the 21st Amendment to protect dry territory and prevent misuse by the States of their new powers to restrict interstate commerce in liquor. Revenues from liquor taxes usually go into the general fund, but in some States are applied to support of specific public welfare measures. Temperance instruction in schools is required in 20 States.

Federal agencies are essential to make State legislation and State systems of liquor control effective. They have been greatly strengthened by the recent reorganization of the Federal Alcohol Administration, formerly under the Treasury, but now an independent establishment co-operating with the Alcohol Unit of the Bureau of Internal Revenue of the Treasury Department. The original F.A.A. Act to protect revenue derived from distilled spirits, wine, and malt beverages, to regulate interstate and foreign commerce, . . . to enforce the 21st Amendment, etc., was approved Aug. 29, 1935. The Amendatory Act was approved June 26, 1936, but took effect as to the reorganization plan May 15, 1937. Basic permits are required for all interstate and foreign commerce in liquors.

Resale is restricted and permits conditioned on compliance with regulations concerning unfair competition and unlawful practices, and with the requirements of the 21st Amendment and all Federal laws. (S. McC. L.)

**Literacy:** see ILLITERACY.

**Literary Prizes.** So enamoured has the present-day world become of prizes and contests that it would take a small volume to list all the literary awards of a single year. England, France, and the United States lead in prize-giving. Following are some of the more important awards made in 1937.

**International.**—NOBEL PRIZE FOR LITERATURE (*c.* \$40,000): Roger Martin du Gard, French novelist. (See also NOBEL PRIZES.)

**United States.**—ACADEMY OF AMERICAN POETS (\$5,000): Edwin Markham. AMERICAN HISTORICAL ASSOCIATION. GEORGE LOUIS BEER PRIZE (\$240): Charles Wesley Porter, *The Career of Theophile DeClassé*. JEAN JULES JUSSEAND MEDAL: Samuel E. Morison, *Tercentennial History of Harvard*. JUSTIN WINSOR PRIZE: Carl Bridenbaugh, *Cities in the Wilderness*. COMMONWEALTH CLUB OF CALIFORNIA awards to California authors. Gold medals: John Steinbeck, *In Dubious Battle* and Herbert E. Bolton, *Rim of Christendom*. Silver medals: Hartley B. Alexander,



*God and Man's Destiny*, Julia C. Altrocchi, *Snow-covered Wagons*, and George Ripley Stewart, *Ordeal by Hunger*. JULIA ELLSWORTH FORD CONTEST for *Children's Literature*. First prize (\$2,000): Benson Wheeler and Claire Lee Purdy, *My Brother was Mozart*. Second prize (\$1,000): James Hull, *Stage-struck Seal*. GUGGENHEIM FELLOWSHIPS: Dorothy Bethurum, Louise Bogan, Sterling A. Brown, Harold L. Cook, Donald Culross Peattie, Frederic Prokosch, Sonia Raiziss, Jesse Hilton Stuart. HARPER PRIZE NOVEL: Frederic Prokosch, *Seven Who Fled*. HOUGHTON MIFFLIN LITERARY FELLOWSHIPS (\$1,000 in addition to royalties and advances): Dorothy Baker and David Cornel De Jong. LITTLE, BROWN & CO. CENTENARY PRIZE: Odell Shepard, *Pedlar's Progress*. LITTLE, BROWN & CO. NOVELETTE PRIZE (\$2,500): Wallace Stegner, *Remembering Laughter*. MEGRUE PRIZE (\$500, Dramatists' Guild, New York): Arthur Kober, *Having Wonderful Time*. NATIONAL BOOK AWARDS FOR 1936 (American Booksellers Association): Margaret Mitchell, *Gone with the Wind*; Victor G. Heiser, *An American Doctor's Odyssey*; Van Wyck Brooks, *The Flowering of New England*; Della T. Lutes, *The Country Kitchen*; Norah Lofts, *I met a Gypsy*. NATIONAL INSTITUTE OF ARTS AND LETTERS. Gold medal: Charles McLean Andrews. NEW ENGLAND POETRY SOCIETY PRIZE: John Hall Wheelock, *Poems, 1911-36*. JOHN NEWBERY MEDAL (most distinguished children's book): Ruth Sawyer, *Roller Skates*. O. HENRY MEMORIAL AWARDS (best short stories): first prize (\$300), Stephen Vincent Benet, *The Devil and Daniel Webster*; second prize (\$200), Elick Moll, *To Those who Wait*; third prize (\$100), Robert M. Coates, *The Fury*. POETRY (magazine) PRIZES: W. H. Auden, Louise Bogan, Thomas H. Ferril, Franklin Folsom, William Pillin, Roger Roughton, Stephen Stepanchev. PULITZER PRIZES (\$1,000 in each class): novel, Margaret Mitchell, *Gone with the Wind*; play, Moss Hart and George S. Kaufman, *You Can't Take it with You*; history, Van Wyck Brooks, *The Flowering of New England*; biography, Allan Nevins, *Hamilton Fish*; poetry, Robert Frost, *A Further Range*. THEODORE ROOSEVELT MEMORIAL AWARD (\$2,500, Doubleday, Doran): Dean Alfange, *The Supreme Court and the National Will*. EDWIN WOLF NOVEL PRIZE (\$2,500, Jewish Publication Society of America): Beatrice Bisno, *Tomorrow's Bread*.

**Great Britain.**—JAMES TAIT BLACK MEMORIAL PRIZES (about £250 in each class): biography, Edward Sackville-West, *A Flame in Sunlight*; novel (posthumous award), Winifred Holtby, *South Riding*. CARNEGIE MEDAL (children's literature): Arthur Ransome, *Pigeon Post*. GREGORY MEDAL (Irish Academy of Letters): William Butler Yeats. HARMSWORTH (£100): Margaret O'Leary, *The House I Made*. HAWTHORNDEN PRIZE (£100): Ruth Pitter, *A Trophy of Arms*. HEINEMANN (£40): Elvire Pélissier, *Jeux de Vilains*. KING'S GOLD MEDAL (poetry): Wystan Hugh Auden. SCHOOLMASTERS' (£1,000, Hodder & Stoughton): Norah K. Smith, *A Stranger and a Sojourner*. SUNDAY TIMES GOLD MEDALS: George M. Trevelyan, *Grey of Fallodon*; Robert Byron, *Road to Oxiana*; Robert Lynd, *I Tremble to Think*; Margaret Irwin, *The Stranger Prince*.

**Canadian.**—LORNE PIERCE MEDAL (Royal Society of Canada): Stephen Leacock. (See also CANADIAN LITERATURE.)

**French.**—FÉMINA PRIZE NOVEL (5,000 fr.): Raymonde Vincent, *Campagne*. FÉMINA AMÉRICAIN: Naomi L. Babson, *The Yankee Bodleys*. FÉMINA ANGLAISE (£40): Margaret Lane, *Faith, Hope, No Charity*. GONCOURT PRIZE NOVEL (5,000 fr.): Charles Plisnier, *Marriages*, and *Faux Passeports*. INTERALLIÉ: Romain Roussel, *La Vallée sans Printemps*.

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(M. A. WR.)

**Literary Research.** The most important discovery of 1937 was that of 18 lines of an ode by Sappho, found by Signora Norscia inscribed on a piece of pottery of the second century B.C., which was disclosed by Signor Breccia, an Italian excavator in Egypt. It constitutes the earliest document extant by Sappho, and apparently was written while she was in Crete.

Elderkin published in *Hesperia* two maledictory inscriptions of the third century A.D., found by the American excavators of the Agora at Athens.

Two interesting maps were found at the Bodleian library: de Gourmont's map of Champagne, 1546, and Mollineux's map of the world, on what is now called Mercator's projection. Only four other copies of the latter exist.

Seventy new poems by Franco Sachetti were published from the Lateran collection by Alberto Chiari, in his *Il Libro delle Rime di Franco Sachetti*.

Prof. Abbott brought out a catalogue of Lord Clinton's extremely important papers, found six years ago at Fettercairn House, concerning Johnson, Boswell, and Sir William Forbes. Hitherto unknown letters by Horace Walpole and by Lord Chesterfield have been brought to light.

The main body of literary discoveries was concerned with the 19th century. The letters of Fanny Brawne to Fanny Keats shed considerable light on the life of Keats, and remove many misconceptions. Finney published a new sonnet of Keats, from Mr. Pierpoint Morgan's *Woodhouse Scrapbook*, and Dorothy Hewlett had a new fragment in her *Adonais, a life of John Keats*. Signora della Robbia also used new documents in her work on Shelley's *Emily*.

E. de Selincourt brought out new letters of William and Dorothy Wordsworth in *The Middle Years*, and Mr. Samuel Romilly discovered the large correspondence of Maria Edgeworth with Lady Romilly. A romantic find was made at Abbotsford of the letters, actually hidden in a secret drawer of a writing-table, of Scott to Charlotte Carpenter.

Peter Quennell published the correspondence between the Princess Lieven and Metternich from 1820 to 1826, and the letters of the Tsar Nicholas to the Empress Marie were brought out for the first time by Dr. Bing.

The sixth volume of the series *Correspondance générale de Marcel Proust* contains Proust's letters to Madame and Monsieur Emile Straus.

(S. L. EN.)

**Literature:** see AMERICAN LITERATURE; AUSTRALIAN LITERATURE; BELGIAN LITERATURE; CANADIAN LITERATURE; DUTCH LITERATURE; ENGLISH LITERATURE; EUROPEAN LITERATURE; FRENCH LITERATURE; GERMAN LITERATURE; ITALIAN LITERATURE; LITERARY PRIZES; LITERARY RESEARCH; PUBLISHING; RUSSIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH-AMERICAN LITERATURE; SPANISH AND PORTUGUESE LITERATURE.

**Lithography:** see PRINTING.

**Lithuania,** Baltic republic of north-central Europe, N. of Poland, member of the League of Nations. Seat of government, Kaunas (Kovno; 105,370, 1936). President (1932-39): Antanas Smetona. National flag, yellow, green and red horizontal stripes.

**Areas and Population,** including autonomous Klaipeda (Memel, seaport—38,079), but excluding Vilna (10,422 sq.mi.; 1,000,000; with like-named capital—207,750 in 1931—claimed by Lithuania) and Suwalki, in Polish occupation, 21,489 sq.mi.; (1936) 2,499,529 (four-fifths Roman Catholic; Memel is Protestant). Gardinas (Grodno; Polish) 61,600; two other towns ex-



ceed 20,000.

**History, Trade and Finance.**—Theoretically the Diet (49, proportionately elected, 1936) wields sovereign power, but a dictatorship persists; premier, the president's nominee, Juozas Tubelis. Resentment at the Polish tenure of Vilna (see *Encyclopædia Britannica*, vol. 14, pp. 215-16) remains active. Poland threateningly discountenanced a tentative Lithuanian-Soviet rapprochement.

Over three-quarters of the population produce butter, pigs, poultry, eggs, flax, and timber. Imports (1936): 156,060,500 litas (£5,202,000); exports: 190,485,000 (£6,348,000), Britain taking half.

Currency unit: (silver) litas (at par, 48.66 litas = £1 = \$4.87). Budget (1937 estimate): 298,895,256 litas. Notes (Bank of Lithuania; fully covered) and gold (1937): 186,240,000 litas.

**BIBLIOGRAPHY.**—H. F. Chambon, *Le Lituanie Moderne* (Paris, 1934). (H. F. W.)

**Little Entente.** a political organization binding together the States of Czechoslovakia, Rumania, and Yugoslavia. Created immediately after the World War as an alliance against common dangers threatening these three States (Habsburg restoration, Hungarian revisionism), for which purposes, and those of general co-operation, periodical meetings were held between the three foreign ministers, it was developed in 1929 by the conclusion of a General Act of conciliation, arbitration and judicial settlement between the three countries; and on Feb. 16, 1933, by the adoption of a statute which set up a permanent council, meeting at least three times a year, with an economic council, a permanent secretariat, and any other bodies considered desirable.

Through these organs, the three States were to act as a single unit in foreign policy, on the basis of the Covenant of the League of Nations, the Kellogg Pact, the General Act, etc.

In 1937, regular meetings were held. Yugoslavia's agreements with Bulgaria and Italy were noted with satisfaction. The Little Entente affirmed its friendship with Rome, its adherence to the principles of the League, and its refusal to enter ideological blocs. A more conciliatory attitude was adopted towards Hungary, with whom negotiations were carried on in the autumn (see HUNGARY). A Military Advisory Council was set up in Prague (April 28).

Thus solidarity was preserved; at the same time, the structure of the alliance was undeniably strained by Germany's attacks on Czechoslovakia and her courtship of the other two parties, combined with Czechoslovakia's defensive alliance with the U.S.S.R., which was regarded with disfavour by many groups in Rumania and Yugoslavia.

**BIBLIOGRAPHY.**—See Crane, S. O., *The Little Entente* (London, 1931). (C. A. M.)

**Litvinov, Maxim Maximovich** (1876— ), Russian politician; as agitator and journalist devoted himself from youth to revolutionary propaganda; joined the Social-Democratic Party in 1898, and in 1904, the clash between the Mensheviks and the Bolsheviks, supported Lenin and the latter; participated in many congresses and conferences, and after the revolution (1917) was the Party's plenipotentiary in London, where he was imprisoned for a short time as a hostage. Later he was the U.S.S.R. commercial representative in Estonia, took part in the conferences at Genoa and The Hague, and led the Soviet delegations at the 1927, 1928, and 1929 sessions of the preliminary disarmament commissions of the League of Nations, in 1928 signing the Kellogg Pact for the U.S.S.R. Since 1930 he has been People's Commissar of foreign

affairs (after being for several years assistant); in this capacity he has signed many important agreements, such as the Moscow Protocol with the Baltic States, and the non-aggression pacts with Poland, France, and the Little Entente; and has done much, by his visits to the U.S.A. and European capitals, to regain for his country political contact with the rest of the world. In Dec 1937, M. Litvinov was, under the new constitution, returned unopposed for the Petrograd constituency of Leningrad.

**Livestock.** Except in the United Kingdom, France, Belgium and South Africa, no markedly unusual conditions confronted the livestock industry throughout the world in 1937. England suffered the worst epidemic of foot-and-mouth disease since 1923. Flocks and herds in 21 counties were affected and from March 31 to the end of the year the slaughter of infected and exposed animals, to stamp out the disease, numbered 7,514 cattle, 14,477 sheep, 6,197 pigs and 7 goats. Compensation paid by the Government to the owners of the slaughtered animals was £232,032. Cattle and sheep in France suffered severely from a similar epidemic. In Belgium the loss was confined mainly to cattle. In South Africa a severe drought caused heavy losses of livestock.

The census of livestock on farms in different countries in 1937 was officially reported as follows, the 1936 figures being in parentheses herein for convenience in making comparisons. These reports apply chiefly to the principal farm animals, cattle, horses, sheep and hogs, but where other livestock, such as mules and goats, is of economic importance it is included. These reports are not all of the same dates in 1937 and 1936 as different countries report the livestock census as of different dates. For specific details of each separate livestock industry see CATTLE, HOGS, HORSES, SHEEP, SHOWS and also POULTRY, which is not included in the following reports on the numbers of livestock.

**United States.**—All cattle and calves, 65,930,000 (66,448,000). Sheep and lambs, 52,918,000 (52,588,000). Hogs and pigs, 44,418,000 (42,948,000). Horses and colts, 11,163,000 (11,445,000). Mules and mule colts, 4,477,000 (4,571,000).

**Canada.**—All cattle and calves, 8,840,000 (8,840,600). Sheep and lambs, 3,339,000 (3,327,000). Hogs and pigs, 3,963,000 (4,145,000). Horses and colts, 2,882,990 (2,891,540).

**England and Wales.**—All cattle and calves, 6,614,000 (6,540,000). Sheep and lambs, 17,182,800 (16,648,000). Hogs and pigs, 3,632,300 (3,803,800). Horses and colts, 858,100 (865,600).

**Scotland.**—All cattle and calves, 1,294,000 (1,313,000). Sheep and lambs, 7,503,500 (7,557,000). Hogs and pigs, 242,000 (236,400). Horses and colts, 146,800 (147,000).

**Northern Ireland.**—All cattle and calves, 730,200 (769,600). Sheep and lambs, 828,900 (834,800). Hogs and pigs, 569,400 (521,700). Horses and colts, 90,900 (90,800).

**Irish Free State.**—All cattle and calves, 3,964,000 (4,014,000). Sheep and lambs, 2,988,300 (3,062,000). Hogs and pigs, 956,000 (1,017,000).

**New Zealand.**—All cattle and calves, 4,389,101 (4,254,000). Sheep and lambs, 31,315,818 (30,113,704). Hogs and pigs, 802,419 (808,463). Horses and colts, 277,799 (276,170).

**Germany.**—All cattle and calves, 20,065,000 (20,065,000). Hogs and pigs, 23,707,000 (25,752,000). Sheep and lambs, 4,684,000 (5,997,000). Horses and colts, 3,430,000 (3,407,000). Goats and kids, 2,618,000 (2,630,000).

**France.**—All cattle and calves, 15,762,000 (15,670,000). Sheep and lambs, 9,788,000 (9,558,000). Hogs and pigs, 7,089,000 (7,043,000). Horses and colts, 2,774,000 (2,810,000). Goats and kids, 1,359,000 (1,316,000). Mules and mule colts, 117,000 (123,000). Asses, 203,000 (211,000).

**Italy.**—All cattle and calves, 7,288,810 (7,235,000). Sheep and



lambs, 9,095,000 (8,862,000). Hogs and pigs, 2,813,920 (3,205,690). Horses and colts, 796,490 (816,270). Goats and kids, 1,803,570 (1,794,630). Mules and mule colts, 416,100 (413,720). Asses, 799,830 (805,310). Hinnies, 8,850 (8,100).

**Poland.**—All cattle and calves, 10,547,000 (10,198,000). Hogs and pigs, 7,672,000 (7,059,000). Horses and colts, 3,883,000 (3,824,000). Goats and kids, 403,000 (383,000).

**Czechoslovakia.**—All cattle and calves, 4,595,592 (4,283,071). Hogs and pigs, 3,242,158 (2,744,745). Goats and kids, 1,071,844 (1,000,221). Sheep and lambs, 591,807 (547,000). Horses and colts, 703,835 (695,003).

**Yugoslavia.**—All cattle and calves, 4,073,729 (3,982,359). Sheep and lambs, 9,568,338 (9,211,101). Hogs and pigs, 3,126,241 (2,931,900). Horses and colts, 1,216,085 (1,200,831). Buffaloes, 37,217 (36,946). Mules and mule colts, 17,987 (18,430). Asses, 123,461 (120,925).

**Latvia.**—All cattle and calves, 1,209,949 (1,261,442). Sheep and lambs, 1,333,999 (1,351,632). Hogs and pigs, 739,317 (674,374). Horses and colts, 391,948 (388,770).

**Belgium.**—All cattle and calves, 1,782,840 (1,837,494). Hogs and pigs, 1,054,475 (1,284,465). Horses and colts, 263,104 (231,406).

**The Netherlands.**—All cattle and calves, 2,626,717 (2,569,797). Hogs and pigs, 1,406,366 (1,678,984). Sheep and lambs, 608,333 (654,530). Horses and colts, 299,989 (295,143).

**Norway.**—All cattle and calves, 1,343,245 (1,348,466). Sheep and lambs, 1,739,029 (1,748,600). Hogs and pigs, 445,000 (410,000). Horses and colts, 189,583 (185,468). Goats and kids, 321,655 (331,350).

**Lithuania.**—All cattle and calves, 1,163,000 (1,148,500). Hogs and pigs, 1,183,530 (1,210,000). Sheep and lambs, 1,288,500 (1,275,400). Horses and colts, 549,700 (546,880).

**Denmark.**—All cattle and calves, 3,079,000 (3,107,000). Hogs and pigs, 2,918,000 (3,516,000).

**Hungary.**—All cattle and calves, 1,756,254 (1,741,637). Hogs and pigs, 2,623,530 (2,554,323). Sheep and lambs, 1,483,917 (1,350,442). Horses and colts, 798,066 (794,279). Goats and kids, 36,459 (32,575). Mules and mule colts, 1,257 (1,015). Asses, 4,183 (3,905).

**Switzerland.**—All cattle and calves, 1,637,748 (1,568,251). Hogs and pigs, 935,628 (876,008).

**Chosen.**—All cattle and calves, 1,702,979 (1,679,470). Hogs and pigs, 1,573,590 (1,616,408). Horses and colts, 51,560 (52,608). Goats and kids, 39,534 (34,395). Sheep and lambs, 12,143 (9,388). Mules and mule colts, 1,065 (1,269). Asses, 3,997 (4,369).

**South Australia.**—All cattle and calves, 328,013 (335,354). Sheep and lambs, 7,905,112 (7,945,745). Horses and colts, 200,870 (197,368). Hogs and pigs, 85,047 (93,458). (S. O. R.)

**Local Government:** see MUNICIPAL GOVERNMENT.

**Local Option:** see LIQUOR LAWS.

**Locusts:** see ENTOMOLOGY: *Locusts or Grasshoppers.*

**London.** The population of the county area is now decreasing, and more Londoners live outside the county than within it. In 1937, the estimated population of the county was 4,230,000 (census 1931, 4,397,000) and that of "Greater London" 8,927,000 (census 1931, 8,202,818).

Nineteen thirty-seven was the year of the triennial elections for the London county council and the metropolitan borough councils. The former, held on March 4, resulted in a gain of six seats by the Labour party, whose majority over the Municipal Reformers increased to 26. Lord Snell was unanimously re-elected chairman six days later. At the borough elections on

Nov. 1, the Labour party's success was repeated, and Labour is now in control of 17 of the 28 metropolitan boroughs, having added Hammersmith and Lambeth to those it previously held. The borough elections resulted in the return of 778 Labour members, 598 Municipal Reformers, and 1 Communist—who were chosen by the 35.4% of the electors who troubled to record their votes. The newly-established borough of Edmonton, in outer London, was also won by the Labour party.

The movement on the part of the urban districts within Greater London, though outside the L.C.C. area, to acquire borough status, largely as a bulwark against possible future plans to extend the county area, continued, and seven new boroughs—Edmonton, Romford, Epsom and Ewell, Wembley, Wanstead and Woodford, Beddington and Wallington, and Bexley—came into existence on Nov. 9, 1937; others, including Carshalton, Erith, Dagenham, Chingford, and Coulsdon and Purley, have applications for charters pending. The county of London is now surrounded with a ring of 36 municipal boroughs, all in the metropolitan police area.

The London Passenger Transport board, formed in 1934 to consolidate the passenger traffic facilities within a radius of 20 mi. of Charing Cross, is proceeding with an extensive scheme of tube railway extensions and the conversion of London's tramway system to trolley bus operation. The "Central" (formerly "Central London") tube is being extended to North Ilford, so that its trains may run over L.N.E.R. rails to Ongar and Fairlop in the north-east, and, by means of a new connection with the G.W.R. to Ruislip and Denham in the west; the "Hampstead" tube is being connected at Finchley with the L.N.E.R. lines, now in process of electrification, to Muswell Hill, High Barnet, and Edgware (via Mill Hill), and an extension is planned from Edgware to a point  $\frac{3}{4}$  mi. west of Elstree and rather over a mile from Bushey Heath, whose name it is to bear; the Bakerloo and Metropolitan lines are being connected by a new tube between Finchley road and Baker street, so that Bakerloo trains may be projected to Stanmore. The trams of west and north-east London have already been converted to trolley bus working, and it is anticipated that by the end of 1942, the tram will have disappeared from London. "London Transport," whose passenger receipts for the year ending June 30, 1937, totalled £41,377,929, is now operating 3,154 coaches on its surface and tube railways, 594 trolley buses, 2,060 tramcars, and 6,454 motor omnibuses and "Green Line" long-distance coaches. On May 1, 1937, the bus disappeared temporarily from London streets as the result of a strike of its staff, thus depriving coronation visitors of cheap above-ground transport in Inner London; work was resumed on May 28.

The City proper has seen no great changes during the year. Sir George Broadbridge was succeeded as lord mayor in November by Sir Harry Twyford. The City Corporation has decided to proceed with the construction of a municipal airport at Fairlop, Essex.

No major road improvements in London or its environs were completed in 1937; but the new Chelsea suspension bridge was opened on May 6 by the Canadian premier, Mr. Mackenzie King. The demolition of Rennie's Waterloo bridge was completed, and tenders accepted for its successor, towards the cost of whose construction the Ministry of Transport announced on Dec. 22 that the Government would contribute 60%, thus ending a long-standing controversy between parliament and the L.C.C.; its opening is fixed for the summer of 1940. A decision was taken at the end of the year to apply for powers to duplicate Blackwall tunnel. Wandsworth bridge is being rebuilt, and work will shortly begin on the construction of a lengthy approach road on the south side. Powers were obtained during 1937 to extend the Great West road from Chiswick to Cromwell road in the Earl's Court neighborhood; and the by-pass at the intricate traffic junction at Vauxhall is nearly completed.



The rebuilding of London progresses rapidly. Although in view of the prime necessity of rearmament, work has not yet begun on the new Government buildings in Whitehall, the extensions to New Scotland Yard are in progress. In the City, the extensive new telephone building has greatly changed the appearance of Queen Victoria street. The Adelphi site, between the Strand and the Embankment, was cleared, and the erections of a block of offices and flats thereon begun. Reynolds's house in Leicester square, a building of even greater architectural interest, has also been demolished. In the West End, Bayswater, etc., the process of replacing spacious family mansions by up-to-date blocks of flats has continued at an even accelerated pace; and Vine street police station, to be accommodated in a new building in Savile row (where extensive alterations have been made), is among the well known buildings that are going or have gone. In June, Queen Mary laid the foundation-stone of the new Church House at Westminster; and the new People's Palace at Mile End, replacing the former building burnt down in 1931, was opened at the beginning of the year. Many of the great voluntary hospitals are concerned in rebuilding schemes, among them Westminster (approaching completion), St. George's, Guy's, and the National Hospital, Queen square: the accommodation for research and research-students has at the latter been more than doubled. The new headquarters of the L.C.C. fire brigade, fronting the river at Lambeth, were inaugurated by the King and Queen in July. The increasing work of municipal authorities is causing many of them to seek new accommodation; a fine town hall for St. Pancras in Euston road was opened in the summer, a site has been chosen for a new town hall at Hammersmith, Wandsworth has erected a range of civic buildings, and a town hall for Poplar is in course of erection in Bow road. Work continued on the new London university building in Bloomsbury, inaugurated in 1936, and its now completed tower has become an outstanding London landmark.

Additional sculpture galleries at the Tate Gallery were opened by the King and Queen in June, and the newly organized National Maritime museum at Greenwich came into use, replacing the former Royal Naval museum there.

Slum clearance plans are being actively pressed forward: in 1936-37, 56 areas, involving the displacement and rehousing of 25,460 persons, were cleared, and the L.C.C. erected 7,504 new working-class dwellings, 5,230 of them flats. Clearance schemes are in progress at Battersea, Bethnal Green, Mile End, Southwark, and elsewhere. A loan of £10,000,000 was issued by the L.C.C. in June for health and housing expenditure.

The L.C.C.'s education estimates for the year foresaw an expenditure, including exchequer grants, of £9,767,498 on elementary and £3,617,964 on higher education. The public health of London in 1937 calls for no comment, save for the now customary slight influenza epidemic at the beginning of the year; but Londoners were startled at the end of the year at the news of an outbreak of typhoid at Croydon; the source of infection was traced to a contaminated well. Drastic steps were taken to prevent the spread of the outbreak, which by Dec. 31 had resulted in 30 deaths, 289 cases in all having been notified.

The scheme for establishing a "green belt" round London made progress, additional areas being scheduled for preservation in Middlesex, Buckinghamshire, Surrey, and Essex. The L.C.C. has committed itself to a maximum expenditure of £2,000,000 for this purpose.

In the endeavour to avoid confusing duplications, the L.C.C. has undertaken an extensive overhaul of London street names. Several hundreds of changes were made during 1937, and it is hoped that in two years' time no street name will be used more than once within the county area.

The London fire alarm system has been reorganized and alarms of a new pattern installed. A beginning has been made with the provision of street police boxes, containing first-aid apparatus and a telephone by which the police can be communicated with instantaneously, and 700 such boxes have been erected. A report was issued on July 29 recommending a whole reorganization of the London police court system.

The port facilities of London—used in 1936 by the record figure of 62,169,000 tons of shipping—are being improved by the construction of new overland dock approaches at Shadwell, West Ham, and elsewhere.

The L.C.C.'s budget for 1937-38 provided for a total gross expenditure of £33,545,000 in 1937-38, of which £21,851,450 was to be raised by rates. The county's rateable value is estimated at £60,216,000; its debt on March 31, 1937, was £110,429,881. The average rate levied in the metropolitan boroughs in 1937-38 was 12s. 2d. in the pound; the highest-rated borough (17s. 6d. in the pound) being Poplar, the lowest (9s. 9d. in the pound) Westminster; though it must be noted that, the latter being levied largely on a non-resident population, the rates per head of population in the two cases quoted are £5 10s. 3d. and £39 11s. 2d. respectively. (L. H. D.)

**London Naval Conferences.** During the years 1935-37 a series of naval conferences have been held in London. Of these the most important met on Dec. 9, 1935, and culminated in the signing, at St. James's Palace on March 25, 1936, of the London Naval Treaty of that year. Under this the British Empire, the United States of America, and France undertook, for the period from 1937 to 1942 inclusive, to exchange information about new construction and to refrain from building or acquiring any new warships save those falling within certain qualitative limitations. These limitations were, for capital ships, 35,000 tons, 16-in. guns, and an age limit for replacement of 26 years; for aircraft-carriers, 23,000 tons, 6.1-in. guns, 20 years; for light surface vessels (cruisers and destroyers), 8,000 tons, 6.1-in. guns, 16 to 20 years; and for submarines, 2,000 tons, 5.1-in. guns, 13 years. Definitions of various categories of ships were also fixed by this treaty.

Unfortunately, neither Japan nor Italy, which had attended the conference, would subscribe to the treaty. One of the results of this abstention has been the choice of the 16-in. gun as the heaviest weapon for capital ships, instead of the 14-in. as had been proposed.

During the year 1937 conferences were held in London at various dates between the British Government and delegates from Germany, Soviet Russia, Norway, Sweden, Denmark, and Finland, with the object of arranging for the extension to the fleets of those Powers limitations corresponding to those of the Three-Power Treaty of 1936. As a result of these meetings, two separate treaties were entered into on July 17, 1937, between Britain and Germany and between Britain and Russia, under each of which the same provisions as regards exchange of information, definitions, age limits, and qualitative limitations were agreed to by the contracting parties. Both the German and Soviet Governments insisted on certain exceptions to these conditions as touching their liberty to construct a limited number of cruisers mounting guns of heavier calibre than 6.1-in.

So far no treaties have been signed by Norway, Sweden, Denmark, or Finland, but there is reason to suppose that these four Powers will be prepared to adhere to the limitations fixed by the Anglo-German and Anglo-Soviet treaties.

By far the most important provision of the three treaties above mentioned, and therefore the greatest achievement of the various conferences, is the clause providing for the exchange of informa-



tion about new naval construction. This is designed to avoid the atmosphere of suspicion which is otherwise apt to arise between rival naval powers, an atmosphere which is not conducive to the growth of peaceful relations. (F. E. McM.)

**London, Royal Society of:** see ROYAL SOCIETY OF LONDON.

**London University.** There are now 36 colleges and 24 institutions connected with the university, and 244 professors, 154 readers, and 945 recognized teachers, together with many assistants. Of the recently established chairs, perhaps the most interesting is the Weldon chair of biometry, devoted to the higher statistical study of biological problems, and held by Professor J. B. S. Haldane at University college. A slight drop in the number of students must be recorded for 1937, although in five years the number of internal students has increased by 2,820, the total being 13,613.

Decreases in arts have been almost completely offset by increases in laws, medicine, engineering, and, less noticeably, in science. Apart from London graduates, 446 students from 105 other universities were admitted to advanced and post-graduate courses during 1936-37.

Students make their own arrangements for residence, but there is now accommodation in University college and other hostels, and in inspected lodgings for about one in five. External students are now registered, and arrangements can be made for them to study under advice. Of 6,779 such students, 3,778 are in university colleges and other institutions.

The special lectures continue. These are free to the public and delivered by British and foreign scholars. Last year 152 such lectures were given in 54 courses. Eleven lecturers were from abroad. In 1934 the university, through the Institute of Historical Research, assumed responsibility for the *Victoria County History*. Since then, five volumes have been published and one index, and this year the one-hundredth volume has been completed.

The Senate House block of the new buildings in Bloomsbury is in full occupation. The central library is occupying its new home in the buildings. Royal Holloway and Queen Mary colleges held jubilee celebrations in 1937. (S. J. W.)

**Lorimer, George Horace** (1868-1937), who retired on Jan. 1, 1937 after thirty-eight years as editor of *The Saturday Evening Post*, popular weekly which served as a stepping stone to success for many American writers, died at Wyncote, Pa., Oct. 22, 1937. A brief account of his life may be found in the *Encyclopædia Britannica*, Vol. 14, p. 395.

**Los Angeles,** in Los Angeles county, California, has an area of 442 sq.mi.; its present population is approximately 1,400,000, compared with 102,479 in 1900. It is governed by a mayor (Frank L. Shaw) and fifteen district councilmen. During 1937 death removed three prominent citizens—Doctor John R. Haynes, "father of municipal ownership," president of Los Angeles Water Board; Henry M. Robinson, banker, publicist, philanthropist, and William M. Bowen, attorney, known as "father of Exposition Park." Building projects include a Federal building, costing \$7,280,000, and the Union Railway Station, costing \$10,000,000. Building permits for year, approximating \$65,000,000, include 6,500 single family dwellings.

Vierling Kersey, previously State superintendent of public instruction, assumed superintendency of the city school district in Feb. 1937. Total school enrolment, kindergarten to junior college, was nearly 400,000 pupils. A total of 536 school buildings were

authorized for rehabilitation or construction since the earthquake of March 10, 1933, and a building program, almost completed, was made possible by Federal grant through the Public Works Administration. Earle R. Hedrick succeeded Ernest C. Moore (retired) as provost of the University of California at Los Angeles; the University of Southern California announced a gift of an art gallery and private collection by Mrs. Walter Harrison Fisher; Occidental college celebrated its fiftieth anniversary; George Pepperdine college, dedicated to fundamental Christian ideals, opened to students in September. Cultural events included "Symphony under the Stars" in the Hollywood Bowl, a grand opera and Bach festival, an exhibit of paintings by the Los Angeles Art Association, and numerous exhibits in the Los Angeles museum.

The Metropolitan Water District, comprising Los Angeles and twelve other cities, will supply an abundance of water from the distant Colorado river for domestic and industrial purposes. The main aqueduct (242mi. long with 108mi. of hard rock tunnels) will be completed in 1939 with a capacity of 1,000,000,000 gals. daily.

Los Angeles county is the "Industrial giant of the West." Some 200 new industries were located during the year at an outlay exceeding \$6,000,000. The total 1937 industrial production was approximately \$1,000,000,000. Strikes and minor disturbances, in persistent effort to unionize labour, brought some uneasiness; but the city remained the leading open-shop centre of the Pacific coast, with clearer recognition, however, of collective bargaining. Automobiles in the city numbered 504,587; in the county, 956,974. More than 1,700,000 motor passengers visited the city during the year, spending \$216,700,000. Approximately 1,000 deaths from automobile accidents were recorded. Improvement as a railroad centre resulted from the introduction of rapid streamlined trains, the Union Pacific's "City of Los Angeles" observing a regular 39½-hour schedule between the city and Chicago. Announcement was made of the withdrawal of the luxury steamers of the Grace Lines from California and intercoastal service. Motion pictures represented an investment of \$2,000,000,000, with the season's estimated production outlay at Hollywood studios of \$165,000,000.

Los Angeles harbour took second place in America in total tonnage, with water commerce for 1936 of \$925,754,186. Petroleum was the chief export, lumber, the heaviest import.

The agricultural products of Los Angeles county amounted in 1937 to \$80,000,000. While the severe freeze of January rendered 40% of the citrus fruit on trees unfit for shipment, higher prices brought compensation, the California Fruit Growers' Exchange shipping 53,771 carloads, valued at upwards of \$82,500,000.

(R. D. HU.)

**Louisiana,** first State carved from the Louisiana Purchase, admitted to the Union in 1812, popularly known as the "Pelican State" or "Creole State"; area 48,506 sq.mi.; population according to U.S. census of 1930, 2,101,593; estimated Jan. 1, 1938, 2,150,000. Capital, Baton Rouge, 30,729. The only cities with larger populations are New Orleans: 458,762; Shreveport, 76,655.

Of the State's population 833,532 are urban, or 39.7%; 1,318,160 whites; 776,326 coloured; 2,064,517 native born; 37,076 foreign born.

**History.**—The Legislature did not meet, and no important constitutional changes or elections occurred during the year. Notable progressive movements were: stimulation of the cattle industry by eradication of the cattle tick; liberalization of the State's attitude toward industry, resulting in expenditure of \$50,000,000 in construction of new manufacturing establishments and ex-



ansion of existing ones; development of an elaborate social security program, including expansion of the charity hospital system and the institution of free travelling dental clinics for the poor; improvement in transportation facilities, by elimination of grade-crossings, construction of more farm-to-market roads, and beginning of work on the combination highway and railway bridge over the Mississippi at Baton Rouge; extension of the rural electrification system, enlargement of the soil-conservation program; and large expenditures on public improvements by the State and its municipalities.

Principal State officers: Richard W. Leche, Governor; Earl K. Long, Lieutenant-Governor; E. A. Conway, Secretary of State; P. Tugwell, Treasurer; L. B. Baynard, Auditor; G. L. Porterie, Attorney-General; T. H. Harris, Superintendent of Education.

**Education.**—Education is free and compulsory for all children. Separate schools are maintained for white and coloured. Nearly 100,000 pupils are enrolled in elementary and high schools, 10% of whom are in private and parochial schools. The State provides free textbooks and supplies for all pupils in public, private, and parochial elementary and high schools. Centralized administration, effective supervision, well-trained teachers, adequate buildings and equipment, consolidation, emphasis on vocational education, equalization of educational opportunity, and increased financial support, characterize the public school system. Night classes for adults are rapidly reducing illiteracy; and a State system of free library service is maintained.

Institutions of higher learning supported by public funds are: Louisiana State university, Baton Rouge; Louisiana State normal college, Natchitoches; Louisiana polytechnic institute, Ruston; South-western Louisiana institute, Lafayette; South-eastern Louisiana college, Hammond; Southern university (coloured), Shreveport. The more important endowed and denominational institutions are: Tulane university, New Orleans; Loyola university (Catholic), New Orleans; Centenary college (Methodist), Shreveport; Louisiana college (Baptist), Pineville; Dillard university (coloured), New Orleans.

**Charities and Correction.**—The State maintains the following: charity hospitals at New Orleans and Shreveport, with several others being established under the new social security program; insane hospitals at Jackson and Pineville; schools for the deaf and the blind at Baton Rouge; training school for feeble-minded at Alexandria; Soldiers' home at New Orleans. There are also numerous private and endowed hospitals and orphanages. The State maintains three prison farms for adult offenders, and separate training institutes for male and female juvenile delinquents.

**Banking and Finance.**—There are about 120 State and 30 national banks, with total assets of \$400,000,000, deposits of \$100,000,000, and capital, surplus and reserves of \$50,000,000. The State's bonded debt is approximately \$150,000,000; assessed valuation of property \$1,500,000,000; annual State budget \$40,000,000.

**Agriculture, Manufactures, Mineral Production.**—Cotton, sugarcane, corn, rice, sweet and Irish potatoes, and hay are the chief staple crops. Dairying, stock-raising, citrus fruit culture,



RICHARD W. LECHE, governor of Louisiana

and truck and vegetable gardening are also important agricultural activities. Louisiana is a heavy producer of lumber. About 1,600 industrial establishments, with 70,000 employees, receiving \$50,000,000 annually in wages, produce commodities valued at \$500,000,000.

Principal manufactures are lumber and other wood products, oil and other cotton-seed derivatives, rice products, paper, refined sugar, petroleum products, carbon-black, chemicals, canned vegetables and sea-foods, and tropical clothing. Petroleum, natural gas, salt and sulphur are the chief mineral products, with combined annual value of \$100,000,000.

(W. PR.)

**Loyalty Oath,** an oath required of teachers in certain of the American States. A customary form of this oath is "I do solemnly swear, or affirm, that I will support the Constitution of the United States, the constitution of the state of . . . , and the laws enacted thereunder, and that I will teach, by precept and example, respect for the flag, reverence for law and order, and undivided allegiance to the government of one country, the United States of America."

The oath is required from teachers in 21 States as follows: 1866, Nevada; 1917, Rhode Island; 1921, Colorado, Oklahoma, Oregon, South Dakota; 1925, Florida; 1928, West Virginia; 1929, Indiana; 1931, California, Montana, North Dakota, Washington; 1934, New York; 1935, Arizona, Georgia, Massachusetts, Michigan, New Jersey, Texas, Vermont. The Loyalty Oath, intended by its supporters as a safeguard of the sovereignty of the Republic, is associated by its opponents with a tendency to the excessive development of patriotic exercises, saluting of the flag, state supervision of history books, compulsory non-teaching of evolution and other real or alleged encroachments on the freedom of the academic profession.

**Ludendorff, Erich** (1865–1937), chief strategist of the German Army during the World War, died in Munich, Dec. 20, 1937. Since his war exploits, described in detail in the *Encyclopædia Britannica*, Vol. 14, pp. 469–471, he had unsuccessfully attempted to gain political influence. He was prominent in plots for return of the Hohenzollerns in 1920 and was tried for treason because of participation in the beer hall putsch of 1923. Elected as a Fascist member of the Reichstag in 1924, he showed to such poor advantage that he ceased attendance. He was a candidate for president in 1925, but received only a few votes. Soon thereafter he not only was involved in lengthy marital difficulties but attacked Christianity and urged a return to the worship of Thor and Wodin. Although not openly opposed to Hitler, he did not participate in the Nazi régime because of his desire to restore the monarchy and his contempt for the Brown Shirt military program. Just as Hindenburg grew in popular esteem following the War, so Ludendorff lost favour until even his war accomplishments were disputed.

**Ludwig, Ernst** (1868–1937), former grand duke of Hesse, was born, Nov. 25, 1868. He was a son of Princess Alice, a daughter of Queen Victoria, and a brother of the Russian Czarina. Although the estates which he owned while ruler of Hesse were valued at over two hundred million marks (old type), it was not until after several years of litigation following his abdication in 1918 that he won an annual income of \$400,000. He was known throughout his life as a patron of the arts and a philosopher. He died in Darmstadt, Oct. 10, 1937.

**Lumber** production in 1937 in the United States is estimated at about 26,000,000,000 board feet, a gain of 7% over 1936, but below the normal production of 38,000,000,000 and far



from the peak production of 46,000,000,000 in 1909. Production comes principally from the North-west and South, the former producing about 6,500,000,000 board feet of Douglas fir and the South about 7,000,000,000 board feet of yellow pine. The leading States in order of production were Washington, Oregon, and California. The leading Southern States in order of production were Mississippi, Louisiana, Arkansas, Texas, Georgia, Florida and North Carolina.

Lumber production in 1937 was characterized by unfavourable weather and also the maritime strike and other labour troubles on the West coast. Still later the Japanese war curtailed lumber exports seriously, as Japan and China normally require a large volume of American lumber. Prices reached a new 12 year peak in the spring of 1937, but declined sharply in the fall. Lumber exports increased about 10% over 1936.

Production in 1937 was characterized by: the devising of new outlets to save or use waste material accumulated in large quantities at the sawmills (sawdust, slabs and edgings have formerly been burned or disposed at considerable expense); expansion in making briquettes from lumber waste, particularly pine shavings in the North-west; the use of insulating material made from redwood bark, of which there is an enormous accumulation; the further refinement at sawmills of semi-manufactured products; and the increased use of the small sawmill producing not over 10,000 board feet per day.

Lumber continues to be shipped in large volume through the Panama canal, from the centre of production, the North-west, to the centres of consumption—the North-east and Middle Atlantic States. The Swedish gang saw was introduced as a factor in lumber production and tended to produce accurate and well-sawn lumber, especially common boards and two-inch dimension, at lower cost. The portable band mill continued to replace the circular sawmill, the latter being very wasteful because much wood is converted into sawdust, whereas the narrow kerf of band saws results in less loss.

Wood is continuing to improve its standing as an engineering material. Improved grading processes and better manufacturing processes tend to give lumber a higher standing as a structural building material. The use of metal connectors to improve the strength of timber joints in heavy construction has made definite headway, while the increased use of structural plywood in home construction has made notable progress.

In April 1937, 140 leaders in public and industrial fields met in Washington upon invitation of the National Lumber Manufacturers' Association in an attempt to formulate a program whereby the nation's forest heritage could be better conserved and made continuously productive. Thus the leaders of the lumber industry have definitely favoured a program of forest management to serve the best interests of the country and to make available for the industry a continuing supply of raw material, that is, sawlogs.

(N. C. B.)

**Lustig, Alessandro** (1857-1937), Italian pathologist; born at Trieste. After graduating at Vienna, he steadily built up an international reputation through his work in pathology and bacteriology, having studied bubonic plague in India, and leprosy and malaria in the Argentine and Brazil. As professor of general pathology in the Florentine university since 1890, he wrote his great work, the *Trattato di Patologia Generale*. He was also a member of the Italian senate. He died at Marina di Pietrasanta, Italy, Sept. 24, 1937.

**Lutherans.** The most reliable statistics available at the beginning of 1937 gave the number of Protestants in the world as 135,000,893. Of that number, Lutherans were re-

ported as 63,108,842. The Lutherans are found in all parts of the world, located geographically as follows: Africa, 376,977; Asia 432,893; Europe, 56,662,429; North America, 4,983,134; Oceania 348,704; South America, 304,705.

The Lutheran Church is organized under various forms of government, usually in conformity with the political government in the different countries, with no world organization except the "Lutheran World Convention." This organization came into existence in 1923, as the result of co-operative interest in the relief of distress following the World War, and includes the vast majority of Lutherans in its membership, especially in Europe and America. This body accepts the historic Lutheran Confessions of faith as its basis of unity, and the common call to Christian service as its basis for co-operation. At the 1937 meeting of the executive committee, it was decided to hold the next meeting of the Convention in the United States in 1940. First steps were taken by this body in 1937 to define a basis and specific terms for Lutheran participation in major world movements with other Christian bodies.

Political conditions in Germany continue to press great problems upon the Lutherans in that country, where the church has been so closely connected with the State for such a long time. Changes in the form of civil government have made adjustment in relationship a necessity. The problems of religious liberty, in the existing order, without disestablishment, or disestablishment without disastrous dismemberment, have not yet been solved. The vast majority of Lutherans in Germany are steadfast in their purpose to maintain religious liberty and to find a way, at the same time, by which they may give loyal support to their Government. The trials in these perplexities have strengthened appreciation of spiritual values. Faith in God is the source of hope and courage in the struggle to find the way through.

The Lutheran Church in America has been characterized by two things during the year 1937. First, aggressive movements, in every major body, for the betterment of spiritual conditions and for the extension of every form of Christian service; and, second, conferences between official representatives of independent groups in the interest of a unity and co-operation which will include all Lutherans in America.

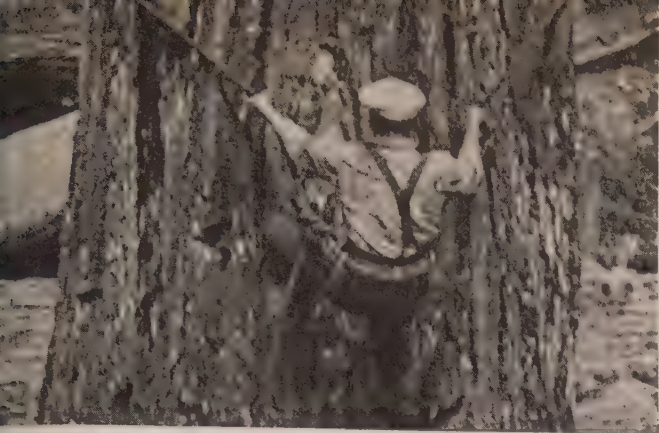
(W. H. G.)

**Luxemburg,** independent grand-duchy, Europe, S.E. of Belgium (commercially allied). Capital, Luxembourg (57,740). Ruler, Grand-Duchess Charlotte (born 1896; succeeded 1919). Government, Catholic-Liberal (1937). Area, 90 sq. mi.; population, 296,913 (mainly Catholic), one-third agricultural; iron mines. Communist Party dissolved by law (1937). Currency, franc (=1.25. Belgian francs; 1935). (H. Fw.)

**Lynchings.** Eight lynchings in the United States during 1937 brought the gruesome total since 1882 to 5,111. All eight victims were in the custody of the law. Three were taken by mobs from jails; five from peace officers. All eight were Negroes; only one was charged with rape. But though the total of those lynched was four less than in 1936, seventeen less than in 1935, and but half of the number lynched in 1934, the method of mob execution of two of 1937's victims shocked the entire country by its savagery. Roosevelt Townes and "Boot Jack" MacDaniels, charged with murder, on April 13, 1937, were tied to trees by a mob at Duck Hill, Miss., stripped of their clothing and tortured to death with blow torches.

News of this bestiality caused a profound reaction when it was dramatically announced on the floor of the lower house of Congress where debate was then in progress on the Gavagan bill to make lynching a crime punishable by the Federal Government instead of leaving it to the several States. Two days later the House





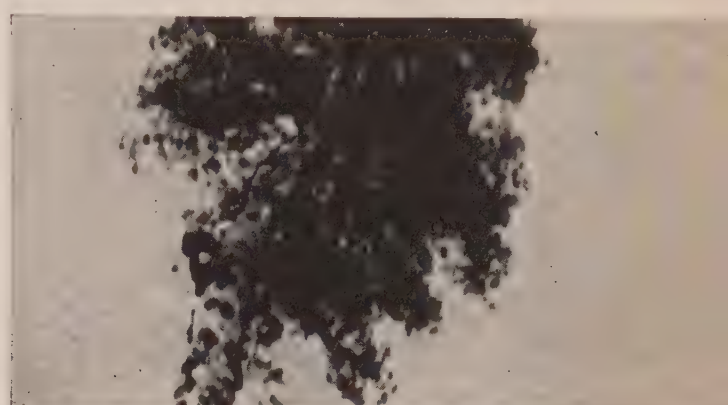
LOGGER at the start of a climb to saw off "top," the upper part of a 200-foot fir tree in the Pacific North-west



HALF WAY UP. Loggers performing this work are called "rosinbellies" because they rub against the resinous bark in climbing by means of a rope sling



THE "ROSINBELLY" leans back in his sling to chop off an impeding branch



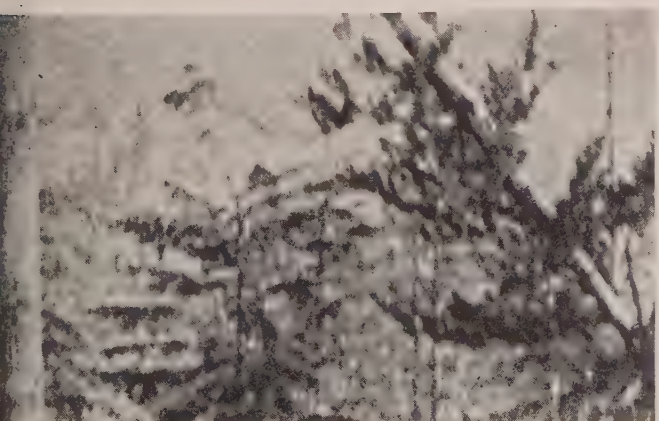
A CROSSCUT SAW is used to cut off the top of the tree



WILL THE FALLING TOP break clean, or will it split the trunk and hurl the logger to death?



A CLEAN, SAFE BREAK, but the trunk sways so violently the logger must cling desperately

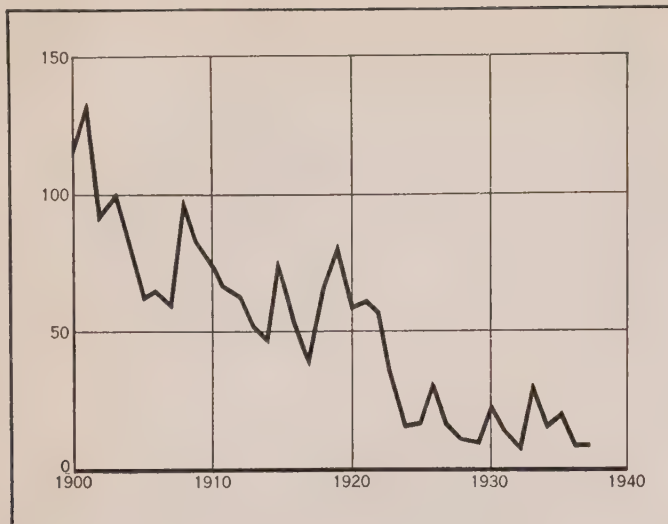


THE SEVERED TOP, weighing several tons, crashes into the forest



THE JOB FINISHED, the tree will be used as a mast for cables to convey logs to the nearest stream





LYNCHINGS in the United States: number each year since 1900

of Representatives passed the bill by a vote of 277 to 119. In the Senate the bill became entangled in a welter of other legislation towards the end of both the regular and the special session. The Senate set the bill as the first measure to be considered in the regular session of Jan. 1938, and it must be "the unfinished business of the Senate until disposed of."

Thus, public opinion of the United States seemed, as 1937 came to an end, about to move the American Congress to enact legislation which would place the power of the National Government against lynch-law. Public opinion polls indicated that 72% of the people of the United States favour the law and, perhaps, even more significant, that 59% of the inhabitants of the Southern States, where all of 1937's lynchings occurred, favour Federal anti-lynching legislation.

The Wagner-Van Nuys-Gavagan bill lays its chief emphasis on punishment of wilfully derelict peace officers and on financial penalties on counties which permit lynchings within their borders. But even more important, American public opinion seemed, as the year closed, united against lynch-law.

(W. WH.)

**MacDonald, James Ramsay** (1866-1937), British statesman; born at Lossiemouth on the Moray Firth, Scotland, Oct. 12, 1866. When, following the financial crisis of 1931, MacDonald's second Labour Government fell, he remained as prime minister of the National Government. He was president of the Lausanne Conference, 1932, and of the World Economic Conference, 1933, and in the latter year visited President Roosevelt in Washington. In June 1935, owing to failing health, he resigned the premiership and took the office of lord president of the council. In the general election of Nov. 1935, MacDonald was the object of a peculiarly bitter attack by the Labour Party in his constituency of Seaham, and was overwhelmingly defeated; but in Feb. 1936 he was returned at a by-election for the Scottish universities.

In May 1937, together with his successor in the premiership, Earl Baldwin, MacDonald resigned from the cabinet, refusing the offer of a peerage. It was while he was on his way, accompanied by his daughter Sheila, to South America to enjoy a long rest, that MacDonald died suddenly on board the liner "Reina del Pacifico." His body was brought from Bermuda by the cruiser H.M.S. "Apollo," and was interred at Lossiemouth, his family having declined the offer of burial in Westminster Abbey. He died at sea, Nov. 9, 1937. For details of his life see *Encyclopædia Britannica*, Vol. 14, pp. 556-7.

**McDowell, William Fraser** (1858-1937), retired bishop of the Methodist Episcopal Church of America, was born at Millersburg, Ohio, Feb. 4, 1858. Following his graduation from the divinity school of Boston university in 1882, he held pastorates in various Ohio towns before being summoned to the chancellorship of the University of Denver in 1890. He returned to church work as corresponding secretary of the board of education of the Methodist Episcopal Church (1899-1904), resident bishop of Chicago (1904-16) and resident bishop at Washington, D.C. (1916-32). At the general conference of 1936, he offered the plan which was adopted for uniting the Northern and Southern Methodists. Bishop McDowell was a world peace advocate and was for many years chairman of the Washington office of the Federal Council of the Churches of Christ in America. An eloquent speaker, he delivered annual lectures at Vanderbilt (1910), Yale (1917), Ohio Wesleyan (1924), and Drew (1933). Among his works were *In the School of Christ* (1910), *A Man's Religion* (1913), *Making a Personal Faith* (1924), and *Them He Also Called* (1929). He died in Washington, D. C., April 26, 1937.

**Machinery and Machine Tools.** The progress made during 1937 in the standardization of steels has been invaluable to the machinery and machine-tool maker. In reducing the number of steels cast to definite specifications, the scope of each has been widened to cover a larger field of application than hitherto, so that the choice of the right steel for the particular requirements of the manufacturer is much less problematical. With the standardization of steels has also come a greater knowledge of the use of the many and various alloys, and this, combined with more correctly applied metallurgical control of heat-treatment, has greatly benefited the finished product.

At least one result of the progress in this direction is the reduction effected in the noise of reciprocating or revolving motions, particularly noticeable where gearing is concerned, the smaller gears now used being much quieter, although running at higher speeds than previously. The most important contribution to quieter gearing is, however, the grinding of the gear tooth profile after hardening.

The year under review has seen important changes in machine design to ensure the rigidity so necessary to obtain full advantage of the tungsten and molybdenum cemented carbide and other super-cutting tools now available.

Instead of relying on the weight of masses of metal to give the desired result, a more correct distribution of metal with adequate cross bracing between main members has increased production capabilities very considerably. A wider application of nitrided steels, having the hardest-known surface attainable, has also taken place, particularly in the use of nitralloy spindles for grinding machines where maximum rigidity is essential. At the high speeds at which such machines are run the nitrided case is able to preserve a stability in the spindle at working temperatures above normal, with the result that it has been possible to reduce bearing clearances from 0.0015 in. (0.038 mm.) down to 0.00025 in. (0.0062 mm.).

In conjunction with this, special spindle-bearing lubricating oils have been produced with a greater viscosity to withstand temperature variations, and the degree of rigidity thus obtained results in a higher finish on the work and less rapid wear on the grinding wheel.

A further notable advance is a patented grinding wheelhead, which goes a step farther by using an oil-pressure controlled spindle bearing on which the load is constant, so that no looseness of the spindle can occur with lowered oil viscosity and bear-



g expansion due to increased running temperatures.

The mention of oil as a controlling medium brings us also to the extended use of hydraulic speed and feed mechanisms in place of mechanical ones. From its considerable development in the grinding-machine field, it has now been applied to many other types such as lathes, shaping, planing, drilling, milling, and grinding machines. Principal among its advantages are: (1) lockless reversal for reciprocating motions; (2) an infinite range of feeds and speeds within defined limits, and (3) the mechanism simpler, and contains fewer moving parts than that for mechanical operation.

The cemented carbide cutting tools previously mentioned have now passed from their experimental stage to one of established use, but, due to their phenomenal metal-removing capabilities, 1937-designed machines have had to provide still greater swarf clearances in bed designs and even mechanical methods of removing the cuttings have been devised to prevent swarf congestion. The use of this product of the metallurgist has also been extended considerably during the year to the manufacture of dies and moulds for metal extrusion purposes.

The reduction of idle time in machine operation is a very important factor in the endeavour to increase production, and during the period under review, very considerable improvements have been made. Perhaps the most outstanding is the multi-spindle fully automatic machine which completely finishes work from the bar, not only at rates of production never before achieved, but to a very fine degree of accuracy. The fully automatic grinder is also another of the machines to have been improved considerably in design and performance.

On machines of a less fully automatic operation, we find that the reduction in idle time is linked up with a greater concentration on reducing operator fatigue. Several features of design are affected by this, but the machine controls naturally have come in for the most attention. On many machines the number of levers and handwheels has been reduced to the minimum, and these are more intelligently grouped for complete and immediate control from the operator's working position. Where more than one working position is essential, such as with certain types of milling machines and lathes, speed and feed controls are duplicated, so that full control is available for the operator from the position most suitable for the work in hand. The use of the single lever control was extended during 1937 to a wider range of machines, several motions being operated on the "joy stick" principle, and in certain applications the direction of lever movement indicating the direction of the motion. Single lever dial speed and feed selectors were also adopted on a wider scale.

The motorization of the machine tool was carried a step farther by fitting motorized spindles to certain high-speed machines, the spindle of the machine forming the armature shaft of the motor. Another important innovation was the overhead busbar system, which allows the power distribution system for individually driven machines to be installed in a shop before the machines are in position, and subsequently enables the layout to be altered at any time by merely disconnecting the machines from plug-in fuse boxes.

A feature of 1937 was the very high degree of accuracy demanded from the manufacturer by the machine-tool user, which led to the wider adoption of systems of fine tolerances. A further result was the production by specialists of such components as ground lead screws of an accuracy unobtainable by the average machine-tool manufacturer.

(W. J. T.)

**MacMonnies, Frederick William** (1863-1937), American sculptor, whose most ambitious undertaking of recent years was the Marne Me-

morial Monument erected at Meaux, France, in 1926 as the gift of the American people. In 1933 his controversial "Civic Virtue" which had stood for many years in City Hall park, New York city, was removed to Foley square. In the same year he was made a commander of the Legion of Honour by the French Government. He died in New York city, March 22, 1937. An account of his career may be found in the *Encyclopædia Britannica*, Vol. 14, p. 596.

**McNeile, Cyril** ("SAPPER") (1888-1937), British novelist. He was educated at Cheltenham college and the Royal Military Academy, Woolwich, and joined the Royal Engineers in 1907. He was promoted captain in 1914 and retired as lieutenant-colonel in 1919. Known chiefly as an author using the pseudonym "Sapper," his novels included: *Sergeant Michael Cassidy*; *Men, Women, and Guns*; *No Man's Land*; *Mufti*; *Bulldog Drummond* (1920); *The Man in Ratcatcher* (1921); *Jim Maitland* (1923); *The Final Count* (1926); *Temple Tower* (1927); *Tiny Carteret* (1930); *The Island of Terror* (1931); *Ronald Standish* (1932). His play, *The Way Out*, was produced in London (at the Comedy theatre) in 1930, and just before his death he had collaborated with Gerard Fairlie in another play, *Bulldog Drummond Hits Out*, produced in July at the People's Palace, London. He married Violet Douglas, and had two sons. He died at Pulborough, Sussex, Aug. 14, 1937.

**Madagascar.** An island separated from S.E. Africa by the Mozambique channel; a French colony; governor-general, Leon Cayla; area, c. 241,094 sq.mi.; population (1932), including Mayotte and Comoro islands, 3,772,570.

The economic situation during 1937 was satisfactory. Agriculture in particular has made important progress. The cultivation of spices, vanilla, and rice has improved both in return per hectare and, often, in quality. The production of coffee has amounted to more than 27,000 tons. These results are the more noteworthy in that one of the richest agricultural districts of Madagascar, the hinterland of Diego Suarez and Majunga, was devastated by a cyclone in the spring of 1937. At Diego itself, houses, drains, and electric and telephonic systems all had to be reconstructed.

An important program of economic undertakings has been carried out. In the extreme south (the Autandroy district), traditionally looked upon as the dried-up country, works of hydraulic agriculture have made possible the irrigation of several thousands of hectares. In the north, destruction caused by the cyclone was repaired, and maritime works begun or further enlarged at Diego Suarez and at Majunga, also at Tamatave. Madagascar was faced in 1937 with a very delicate social problem in the shape of the assimilation of a considerable number of Chinese labourers employed in agriculture.

**Madden Dam:** see PANAMA CANAL AND CANAL ZONE.

**Madeira.** Portuguese island, in the Atlantic ocean, 350 miles off N.W. Africa, largest (270 sq.mi.) of a group (sometimes "The Madeiras"; officially, Funchal district of Portugal; area, 314 sq.mi.; population, 211,601 [1930]; density, 673.8 per sq.mi.; capital, Funchal, seaport, 52,082), including Porto Santo and three uninhabited islands. Its 10 communes are: Calheta (20,193), Camara de Lobos (17,578), Machico (17,343), Ponta do Sol (12,520), Porto Moniz (5,910), Porto Santo (2,416), Ribeira Brava (16,309), Santa Ana (9,814), Santa Cruz (24,551), São Vicente (9,182). Agriculture occupies the Portuguese-Moorish-negro, and -Italian inhabitants. Products: wine, sugar, bananas; home industry, embroidery. (H. Fw.)



**Madrid**, capital city of Spain. A description may be found in the *Encyclopædia Britannica* vol. 14, pp. 616-17. The population (estimate Dec. 31, 1934) was 1,048,100. There are now some 12 mi. of underground railway. Madrid's history in 1937 is the story of its part in the Spanish civil war. It ceased temporarily to be the capital of Spain in Nov. 1936, when the Government moved to Valencia.

General Franco's troops renewed their attacks on the city in early January, accompanying them with severe air-raids; and on Jan. 9 all non-combatants were ordered to leave the city.

Fighting in the Madrid neighbourhood was fierce for several weeks, but at the end of February and in early March the insurgent attacks were repulsed, and in April the "White" troops who had been holding out in the University city were dislodged.

On April 24, the Madrid defence council, under General Miaja, which had controlled the city since the previous November, was superseded by a city council of 20 members representing all the "Popular Front" groups, charged with full authority in civil matters, Gen. Miaja being left in command of the Government troops on the Madrid front. The city was heavily shelled by the insurgents in early June; in July, General Franco's forces renewed their offensive, but were pushed farther back by the defending troops.

It was announced in August that in the 12 months since the beginning of the Civil War, 768 Madrileños had been killed, and 3,567 wounded, as the result of artillery bombardments and aerial attacks.

During the late summer and early autumn there was little fighting in the Madrid area; in September it was announced by the Government that a plot, in which 5,000 persons were said to be involved, had been discovered within the city on the part of a "fifth column" of sympathizers with General Franco.

Severe air attacks on Madrid were resumed in late November and early December, but no serious attempts to take the city by the insurgent land armies were made in the latter part of the year. (See also SPAIN, CIVIL WAR IN.)

**Magazines and Periodicals.** Two major new developments marked American magazine-publishing during 1937: the sudden rise of the large-sized, photographically illustrated "picture magazine," and the appearance of a new flood of pocket sized "digest" magazines.

Ever since Alexander Graham Bell, some 40 years ago, put forward the unheard-of idea of introducing photographic illustrations into the then pamphlet-like bulletin of the National Geographic Society, and over a million readers ultimately proved to like the pictures better than the text, publishers have been playing with the picture-magazine idea. The established newspaper rotogravure sections experimented with picture-presentation techniques, but timidly.

The *Midweek Pictorial*, in semi-magazine form, made tentative efforts to capitalize the evident appeal of pictures. The new tabloid newspapers, on a different plane, served as further indication of the mass appeal of pictures. Large-circulation foreign illustrated magazines such as *L'Illustration*, *Vu*, *The Illustrated London News* stood as possible models. But not until late in 1936, when *Life* appeared, did anyone in America produce a true "picture magazine" whose main purpose was communication to the reader through photographs, the text being largely reduced to captions. *Life*, which stressed the news aspect of pictures, was an instant circulation success. After it, during 1937, came the imitators, most of them echoing *Life's* monosyllabic title, but covering a variety of fields. Among them were *Look*, *Flash!* (a Negro picture magazine), *Foto*, *Photo-History*, *Pic*, *Picture*, *Click*, *See*, *Peek*, *Now and Then*, even a new picture version of

the old *Police Gazette*. By the end of 1937, nearly a score were being published, with an estimated total circulation of 6,000,000 outstanding among them *Life* and *Look* with approximate circulations of 2,000,000 each.

Equally notable has been the new flood of "digest type" magazines. *The Reader's Digest*, originator of the pocket-sized digest idea, was founded in 1922, and for seven years had no imitator. Then, in 1929, when *The Reader's Digest* was first sold on the newsstands, the first flood of imitators began, reaching an eventual total of some sixty. Most were short-lived, and none reached substantial circulations.

During 1937, probably in part because the circulation of *The Reader's Digest*—in excess of 2,000,000—became publicly known for the first time, publishers again became attracted to the pocket size and digest idea, and no less than 33 pocket-sized magazines were launched during the year. Among those pocket-size magazines which directly imitate *The Reader's Digest*, mortality seems to be high: out of 31 which have been launched since the founding of *The Reader's Digest*, 15 have been abandoned; of the remaining 16, most are published abroad, and none is reputed to have a circulation in excess of 60,000; during 1937, only one was begun in the United States. Among those which follow the digest idea but apply it to special fields, success is more frequent: of the 32 such digests begun since 1922, 24 still survive; 13 of these were begun in 1937, covering fields ranging from medicine and business to religion and agriculture. Among the pocket-size magazines which are not actual digests, but have imitated *The Reader's Digest* in format, experience seems to indicate that while the pocket-size is a factor in public appeal, it is not a controlling factor and that such magazines stand or fall principally upon their editorial effectiveness.

Led off by *The American Mercury*, *Coronet*, and *The Commentator*, this latter group was increased by 18 magazines in 1937, covering a variety of fields. In all three groups, there have been since the founding of *The Reader's Digest* something over 110 magazines, with approximately 65 surviving at the end of 1937.

Other activities in the magazine field during 1937 have been less striking. There have been suspensions or absorptions of recent ventures—notably *The New York Woman* and *Today* (the latter combined with *News Week*); one old-established publication, *The Literary Digest*, having suffered a disastrous drop in circulation, was given up by its original owners, combined with *The Review of Reviews*, then sold to new owners again; another, *The Delineator*, under similar circumstances, was sold to and combined with *Pictorial Review*. The five leading review-type magazines have continued efforts to regain circulation and advertising lost, in varying degrees, during the depression—*The Atlantic* adding a serialized novel, *Harper's* and *The Forum* being carried on without substantial change, *The American Mercury* continuing with apparent success its new pocket-size format, *Scribner's* continuing its large-size illustrated format and initiating a "controlled-free-circulation" idea new to general magazine publishing.

The "pulp" magazines continue their growth; at the end of 1937 there were some 150 being published, with a total circulation which had increased from 7,000,000 to 10,000,000 in five years—an increase perhaps in part explainable by the gradual coming-of-age of second generation foreign-language groups. (See also ADVERTISING.)

(DEW. W.)

**Maginot Line:** see ARMIES OF THE WORLD: *Maginot Line*.

**Magnesite.** World production of magnesite in 1934 came back to its former level, with somewhat over 1,000,000 metric tons, and while later figures are incomplete, it seems likely



at current production is in the neighbourhood of 1,500,000 tons. The leading producers are the Soviet Union, Austria, United States and Greece, which together account for about 80% of the total. The United States output is far below the requirements, one-quarter to one-third of which must be supplied by imports, most of which come from Austria and Czechoslovakia. Recent years have brought reports of Russian outputs that are so large in comparison with internal needs and visible exports that the figures have been received with considerable skepticism in the industry. Since otherwise only Greece and the United States have reported outputs in excess of the pre-depression high, it is largely the Russian figures that account for the apparent increase in production.

(G. A. Ro.)

**Magnesium.** Although magnesium metal has been produced on a small scale for a limited number of uses for a long period of years, it is only since 1922 that its real commercial development began. The metal is now used extensively in a wide variety of light metal alloys, and plant capacity and production are expanding so rapidly that it is difficult to determine current outputs; recent world totals have been estimated as low as 5,000 metric tons, and as high as 50,000 tons. The producing countries include Germany, United States, France, Switzerland, United Kingdom, Japan, Soviet Union, and Austria, while a small plant has been authorized in Italy and another is planned in Australia. Germany leads in production, but no specific figures are reported and estimates range from 8,000 to 35,000 tons. Austria has only a small experimental plant, operated intermittently, and the Russian output is also small. Switzerland produces about 700 tons, and the United States 1,000 tons; the position of the others is uncertain, but the outputs are apparently of the order of 1,000-2,000 tons, although that of Japan has been expanding rapidly, and may have exceeded this amount.

(G. A. Ro.)

**Mail-Order Business.** A commercial enterprise which carries on its retail transactions almost entirely by mail and is most prominent in the United States. In common with most businesses, mail-order firms suffered materially during the depression beginning in 1929. For instance, the combined mail-order and retail store net sales of Sears, Roebuck and Co., the largest mail-order house, sank to \$289,289,000 in 1933, but by 1936 had recovered to reach an all-time high-point of \$494,968,000. A similar comparison of the sales of the three largest mail-order houses, Sears, Roebuck and Co., Montgomery Ward and Co., and Spiegel, Inc., is instructive: in 1933 their combined net sales were \$570,551,000; in 1936, \$900,960,000. This gratifying recovery led the three largest mail-order firms to embark on their 1937 programs with a reasonable degree of optimism, and in each case their sales increased for each of the first ten months of 1937 over the same months of the preceding year. Figures for the full year of 1937 were not available at the time of writing, but for the first ten months the combined net sales of Sears, Roebuck and Co., Montgomery Ward and Co., and Spiegel, Inc., were \$843,459,000.

An examination of their month-by-month reports reveals that the ratios of increase became smaller as the year progressed. The upward tendency in the sales curve became more pronounced during the autumn of 1937, when the seasonal upswing of business in general was less than normal.

The increased business noted above is to some extent attributable to large quantity purchases and to operating economies peculiar to the mail-order business, both of which have enabled these companies to raise the general standard of living by making more goods available to consumers at a price lower than they would otherwise have paid. Throughout their history they have

obtained their large sales volume by offering, as a rule, better quality merchandise at the same price, or the same quality at a lower price.

Certain tendencies in the mail-order business have become more apparent recently. Examination of current catalogues reveals an increased emphasis upon private brands: *i.e.* upon merchandise manufactured and sold under the proprietary trade names of the mail-order houses. Such merchandise, placed in competition with nationally advertised brands which are also offered in the same catalogue, has found a ready acceptance with the public. Another tendency is seen in greatly increased installment accounts, which have resulted not from a loosening of credit lines, but by making available more kinds of merchandise to time payment purchasers. For instance, at the close of 1936, the installment account balances of Sears, Roebuck and Co. had increased over the previous year by \$22,000,000, or nearly 68%, attributable in large part to the sale of major household appliances and home modernizing equipment. The installment account balances of Montgomery Ward and Co. increased by \$12,230,000, or 36% over a similar period. This concern, as well as Spiegel, Inc., sells all the merchandise listed in its mail-order catalogue on time payment terms.

In the middle of the 1920's, the two largest mail-order houses, commonly known as Sears and Wards, entered the retail store field. This new activity was largely experimental until about 1928, when the two companies, apparently believing that they had learned enough about retail store operation to justify considerable expansion in this field, opened retail units in a number of communities. By the end of 1937 Sears were operating in the neighbourhood of 480 stores, and Wards in excess of 550. By this time, too, it was clear that the original function of the two mail-order houses had been modified by the added function of acting as jobbers to their own retail stores, for in 1936 and 1937 the over-the-counter sales of both Sears and Wards were somewhat greater than their mail-order receipts.

Despite the success of these two companies in the retail store field, the mail-order system is probably the most economical method yet discovered of distributing goods over a wide area. It is not only economical, but renders a great service to people living in remote sections of the country. The potential market of the mail-order houses is, therefore, still a large one. An aspect of the business under discussion which is often overlooked is its influence—because of its large purchases—on factory production and employment throughout the country. (See also **MARKETING**.)

**Maine,** extreme North-eastern State of the United States, admitted as a State in 1820 and popularly known as the "Pine Tree State," has an area of 33,040 square miles. Population (census 1930) 790,182 (estimated 1938, 800,000). The capital is Augusta, 17,198; the largest city, Portland, 70,810. Of the State's population, 292,793 live in the twenty incorporated cities; in other words, the population is no more than 37% urban.

**History.**—In January 1937 Lewis O. Barrows, of Newport, was inaugurated governor; he was elected in 1936 when only Maine and Vermont out of the forty-eight States remained loyal to the Republican party. In the same month three Republican congressmen, James C. Oliver, of Portland (first district), Clyde H. Smith, of Skowhegan (second district), and Ralph O. Brewster, former governor, of Dexter (third district), took office. Senator Wallace H. White, Jr., of Auburn, was re-elected by a small majority over Louis J. Brann, of Lewiston, retiring and popular Democratic governor. For the first time since 1931 the whole delegation of Maine at Washington was again Republican as in normal times. In 1937 the legislature failed to revise the tax system of the State, but passed legislation that for the first time set



up a merit system for state employees. Perhaps the main political event of 1937 was the defeat by a majority of more than two to one at a state-wide referendum of a law proposing a sales tax to secure revenue for improvement of the public schools and for old age pensions. The legislature summoned in special session late in the year passed legislation providing for the revenue necessary by increasing taxes on liquor sold in the State stores and by cutting appropriations drastically in various State departments. The proposed aid for the public schools was reduced from \$500,000 to \$200,000.



LEWIS O. BARROWS, governor of Maine

**Education.**—In the field of education there was nothing of note to chronicle. A commission reported to the legislature that additional funds amounting to at least \$1,500,000 were necessary from the State to bring the schools, especially those in the more sparsely settled regions, up to reasonable minimum standards. The legislature thought that a third of this amount would be sufficient; even this was defeated in referendum and finally only \$200,000 was voted during the extra session. It is still true that between two hundred to three hundred schools operate on an annual budget of less than \$360 each.

**Industry and Finance.**—The year 1937 saw the greatest number of summer visitors and the highest returns from tourists in the history of the State. No progress was made in the Passamaquoddy bay tidal project which seems to have been definitely abandoned by the Federal Government. The Great Northern Paper Company began a \$3,000,000 hydro-electric development on properties at Nattaseunk. The Central Maine Power Company also started a new power development at Solon to cost around \$1,500,000 over a period of years, while the Bath Iron Works are building more destroyers than any other yard in the world. The deposits in Maine savings banks reached in 1937 the highest total on record. Despite these items of progress that made 1937 an exceptionally favourable year for Maine industries, in the last two months particularly in the textile business Maine felt greatly the national recession.

(K. C. M. S.)

**Maize:** see CORN.

**Malacca:** see STRAITS SETTLEMENTS.

**Malaria.** Malaria continues as one of the most devastating diseases of man. Caused by a protozoan (one-celled animal) parasite which invades and destroys the red blood-cells, and transmitted by the bites of *Anopheles* mosquitoes, its control is a dual problem of curing the patient and eradicating the mosquito. The disease has gradually receded from the cooler temperate zones where agriculture, wealth and education have improved conditions, but in the tropics it has been controlled only where intensive work has been done and large sums of money have been expended such as in the Panama Canal Zone, the Pontine Marshes in Italy and certain commercial plantations in southern Asia. In every malarious region there are natural periods of decline and increase of the disease. At the present time a period of decline in the United States is following a period of increase from 1932 to 1934.

For this reason progress in control can be evaluated only after

a period of years.

An enormous amount of research is being carried on in field stations and laboratories to learn more about the disease and about methods of treatment and prevention. The use of malaria in the treatment of patients suffering from syphilis of the brain has added much to our knowledge of the natural history of malaria. By employing infected mosquitoes to produce the disease the dosage of infecting organisms, the incubation period, the course of the disease, the development of immunity and the effectiveness of treatment have been carefully studied. It has been found that individuals develop immunity to the particular strain of parasite inoculated, but not to other strains, even the same species, and that this immunity persists only a short time after the disease is cured.

There is still a gap in our knowledge of the parasite between the time when it is injected by the mosquito and when it appears in the red blood-cells.

It is now believed that the parasite probably enters the large phagocytic cells of the body where it is protected during its multiplication, and that this accounts for the failure of quinine and other drugs to prevent infection.

Certain advances have been made in treatment. It is now considered advisable to treat the disease vigorously for a week or two, and to treat relapses as they occur, rather than to continue treatment for many weeks. Quinine is still considered the mainstay in treatment, but the new synthetic drug atabrine has proved to be about as efficient as quinine and is more pleasant to take. When either of these drugs is supplemented by small doses of another synthetic drug, plasmoquine, the incidence of relapses is greatly reduced.

Other new synthetic drugs are being produced, some of which may prove to be more effective than those now in use.

In the control of malaria mosquitoes, the treatment of breeding places is constantly receiving more attention. Drainage is the most useful procedure and has accomplished much in the "bonification" project in the Pontine Marshes, and in the Southern United States through labour furnished by the relief agencies of the Federal Government.

The Tennessee Valley Authority has developed scientific control of mosquito breeding along the shores of the lakes formed by the building of dams. The dusting of breeding places with Paris green is used increasingly where drainage is impracticable. The top-minnow, *Gambusia affinis*, although a disappointing agent in devouring mosquito larvae in its natural habitat in the United States, is proving of value in Europe where the absence of its natural enemies allows it to multiply enormously.

The Malaria Commission of the League of Nations, by its studies in many countries, has shown that no one formula can be applied to control malaria, but that each region must be studied carefully before an effective control program can be inaugurated. In the Southern United States full-time malaria units consisting of a physician, an engineer and an entomologist are being added to the staffs of State health departments, and courses of study are being furnished for the training of such personnel. In the development of such programs and in the combined results of many investigations lies the hope of reducing the incidence of malaria in the future.

(H. E. M.)

**Malay States, Unfederated:** see UNFEDERATED MALAY STATES.

**Malta,** island in the Mediterranean, between Sicily and Libya, forming, with the neighbouring islands of Gozo and Comino, a British possession (since 1814), governed since 1934 when the Letters Patent of 1921 granting a Constitution were re-



governed, as a Crown Colony, by a governor aided by an Executive Council; legislation at present is effected by governor's ordinance. Capital, Valletta. Population (census, 1936), including Gozo, 62,165; area (with Gozo and Comino), 120 square miles. The people are mainly of Semitic (Carthaginian) origin, and are Roman Catholics by religion; there is a university, with about 180 students, eight Government higher schools, and over 150 day and evening elementary, and 40 private schools; total expenditure on education, about £145,000 annually. The chief towns are Valletta (pop. 23,000) and the former capital, Civita Vecchia (pop., with the suburb of Rabat, 10,000). Maltese and English are the official languages.

**History.**—Fears have been expressed in some quarters that Italian imperial aspirations may include the attempted annexation of Malta, and the recent Italian fortification of Pantellaria, the island between Gozo and Cape Bon, did not quiet such suspicions; but Mussolini has strongly denied that Italy has any such intentions. Measures have been taken in recent years to reduce Italian influence in the island, and Maltese has (since 1934) taken the place of Italian as the language of Court proceedings.

**Agriculture and Manufactures.**—Cultivation is high, corn crops, fruits, potatoes, and cotton being grown, and there is an extensive fishing industry. Manufactures include lace and cotton goods. Communication is mainly by motor omnibus; Malta and Gozo are connected by a ferry service. Valletta has a magnificent harbour, and is an important port of call for vessels to and from the East.

Revenue and expenditure in 1936-37 were £1,209,000 and £1,251,000 respectively; revenue is mainly from customs, fees, and stamp duties. Imports, in 1936, were valued at £3,440,000 and exports at £647,450. British coinage is in use, with a special bronze coin valued at one-third of a farthing.

**Defence.**—Malta is the headquarters of the British Mediterranean fleet, and of the British air force in the Mediterranean, and has an important dockyard and arsenal. Some 3,500 British troops are stationed there.

**Manchoukuo** (MANCHURIA), an Empire, closely connected with Japan, located in north-eastern Asia, bounded on the north and east by Siberia, on the west by Siberia, Outer Mongolia and China proper, on the south-east by Korea. Its capital is Hsinking; its ruler the Emperor Kangte.

**Area and Population.**—The area is 460,383 sq.mi.; its population (June 30, 1936) 33,836,898, including about 700,000 Koreans, about 230,000 Japanese, about 50,000 white Russians and some 3,500 foreigners of other nationalities, among these 14 British, 459 Germans and 226 Americans. Population of chief cities: Hsinking (1936) 303,301; Harbin (1936) 500,526; Mukden (1935), 388,841; Antung (1935) 154,575.

**History.**—Manchoukuo contains the four former Chinese provinces of Fengtien, Kirin, Heilungkiang and Jehol. Following the Russo-Japanese War of 1904-05 Japan took over and extended Russia's former rights of economic development in South Manchuria. The South Manchuria railway zone, which included considerable sections of the towns of Mukden and Hsinking and constituted a sort of State within a State, was under Japanese administration. Friction between the Japanese and Chinese authorities over such questions as new railway construction, Japanese and Korean rights of land and property ownership outside the railway zone occurred and became aggravated after Chang Tseh-liang, the governor of Manchuria, announced his allegiance to the nationalist régime at Nanking. Matters came to a head on Sept. 18, 1931, when Japanese troops, employing as a pretext the alleged explosion of a bomb on the South Manchuria railway,

occupied Mukden, then the capital of Manchuria, and quickly extended their occupation to the whole of Manchuria. Those groups in Manchuria which were willing to co-operate with the Japanese army selected Henry Pu Yi, heir of the Ching dynasty in China, who had been living in retirement in Tientsin, as chief executive of the new State. Pu Yi assumed office as the Emperor Kangte on March 1, 1934. Meanwhile Jehol had been added to the new State by a swift campaign of the Japanese troops in the spring of 1933. There is no parliament in Manchoukuo. Administration is largely carried on by the State Council, which performs the functions of a Cabinet, while a Privy Council also functions in an advisory capacity to the emperor. While the higher offices in the Manchoukuo administration are fairly evenly divided between natives of Manchoukuo and Japanese, the influence of Japan on all State affairs is overwhelmingly great. The Japanese ambassador to Manchoukuo (General Kenkichi Uyeda), is also commander-in-chief of the Kwantung army, the Japanese army of occupation.

The League of Nations passed a resolution recommending non-recognition of Manchoukuo; and for six years after its establishment Japan and the Central American Republic of El Salvador were the only countries to extend *de jure* recognition. Italy recognized Manchoukuo on Nov. 30, 1937; and Germany maintains a special trade representative in Hsinking. The United States and Great Britain maintain consulates in Mukden and Harbin; and their consuls deal with the established authorities on an informal basis.

**Trade and Communications.**—Manchoukuo's exports and imports in 1936 were valued at 602,758,989 yuan and 691,889,273 yuan respectively. Japan supplied 507,216,093 yuan worth of imports and purchased 237,546,009 yuan worth of exports. Manchoukuo has about 6,000 mi. of railway lines, of which about 2,000 were constructed after the creation of the new State. The principal towns are connected by a regular commercial air service.

**Agriculture, Natural Resources, Manufactures.**—Manchoukuo's most important crop consists of soya beans. Kaoliang, millet corn and wheat are also produced in substantial quantities, together with small amounts of rice, cotton and tobacco. The Mongolian regions of the west and north-west are well adapted to cattle breeding. Manchoukuo in 1935 produced 10,944,234 tons of coal and 1,576,178 tons of iron ore. The country is rich in timber and contains gold deposits, although the yield from the latter has thus far been slight. Manchoukuo has an ambitious five year plan, ending in 1940, for the development of its heavy industries and mining. With a view to promoting the inflow of new capital, a number of industrial enterprises were transferred from the South Manchuria Railway Company to the Japan Industry Company in the autumn of 1937.

**Finances and Banking.**—The unit of currency is the Manchoukuo yuan, equivalent in value to the Japanese yen (29.15 American cents). The budget, which has been increasing in size, amounted to 248,098,760 yuan in 1937. The Central Bank of Manchoukuo controls the note issue; the Industrial Bank of Manchoukuo specializes in crediting industrial enterprises; and there are a number of other Japanese and Manchoukuo banks.

**Education and Religion.**—In 1936 there were 12,884 schools in Manchoukuo, with 667,967 students. Illiteracy is very high, especially in the country districts. The principal religions are Buddhism, Taoism, Mohammedanism and Lamaism. There are about 100,000 Christians in the country.

**Armed Forces.**—Besides the Kwantung army, the size of which is kept secret, Manchoukuo maintains an army of 80,000 and a flotilla of 11 gunboats.

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**Mandated Pacific Islands:** *see* PACIFIC ISLANDS, MANDATED.

**Mandates and Mandated Territories.** The principal subject of interest during 1937 was the Palestine problem, to discuss which the Permanent Mandates commission held an Extraordinary Session from July 30 to Aug. 18.

For a report of the commission's finding in this matter, *see* PALESTINE: *History*.

The mandates commission also held two ordinary sessions during the year. In the first session, May 31–June 15, it examined the annual reports for 1936 of the mandatory powers for Togoland and the Cameroons, and Tanganyika (all British "B" mandates), Nauru and New Guinea (Australian "C" mandate), and S.W. Africa (S. African "C" mandate). In regard to the three "B" mandates in Africa, the commission asked whether the mandatory power considered itself legally obliged to apply the rule of economic equality to imports from states non-members of the League, referring to the fact that neither under the terms of the mandate nor under Article 22 of the Covenant could non-member states claim economic equality for their imports into a mandated territory, but only by virtue of agreements, as the mandatory power maintained, concluded with it. The commission noted that the mandatory power had no intention in any of the three territories to introduce legislation which would dis-

criminate against non-member states. In regard to the Cameroon and Togoland the commission asked to be informed whether the exports of these territories enjoyed reciprocity under the commercial régime in force between them and certain non-member states.

In examining the report on S.W. Africa, the commission referred again to its concern at some of the findings of the S.W. Africa commission (June 1936), particularly in regard to the administration of the mandate as a fifth province of the union which, it noted, was not contemplated, and in regard to which it had made legal reservations; native education it considered to be inadequate.

At its 33rd session, Nov. 9–19, the commission examined the annual reports for 1936 of the mandatory powers for Syria and the Lebanon (French "A" mandates), the Cameroons and Togoland (French "B" mandates), Ruanda-Urundi (Belgian "B" mandate), Western Samoa (New Zealand "C" mandate), and Pacific Islands (Japanese "C" mandates).

The accredited French representative from Syria and the Lebanon (*qq.v.*) made a statement on the various documents communicated to the commission dealing with the signature in Sept. and Nov. 1936, of treaties between France and the two mandated territories, providing for the termination of the French mandate in 1940. As the question of their emancipation did not arise until that date the commission merely took note of the documents.

*Mandated Territories*

Territory	Approximate Area	Date of Mandate	Mandatory Power	Former Title	Former Administration
<i>South-west Africa</i> , including Caprivi Zipfel, formerly part of Bechuanaland protectorate. . . . .	317,725 sq.mi.	Dec. 17, 1920	Union of South Africa	German South-west Africa	German Empire
<i>Togo</i> , comprising: (1) Togoland, i.e. western section, excluding the seaboard. . . . .	13,040 sq.mi.	July 20, 1922	Great Britain	Togo	German Empire
(2) Togo, i.e. eastern section and seaboard . . . . .	20,070 sq.mi.		France		
<i>Cameroons</i> , or Cameroun, comprising: (1) Cameroons adjoining Nigeria . . . . .	34,081 sq.mi.	July 20, 1922	Great Britain	Kamerun	German Empire
(2) Cameroons adjoining French Equatorial Africa . . . . .	166,490 sq.mi.		France		
<i>Tanganyika</i> . . . . .	360,000 sq.mi.	July 20, 1922	Great Britain	German East Africa	German Empire
<i>Ruanda-Urundi</i> . . . . .	20,506 sq.mi.		Belgium		
<i>Palestine</i> . . . . .	10,000 sq.mi.	Sept. 29, 1923	Great Britain	Palestine	Ottoman Empire
<i>Transjordan</i> . . . . .	34,700 sq.mi.			Part of the Wilayat of Syria	
<i>New Guinea, Territory of</i> , comprising: (1) North-eastern New Guinea (i.e. the northern section of south-east New Guinea) . . . . .	93,300 sq.mi.	Dec. 17, 1920	Commonwealth of Australia	Kaiser Wilhelm's Land	German Empire
(2) Bismarck Archipelago (New Britain, New Ireland, the Admiralty Isles, etc.) . . . . .				Bismarck Archipelago	
(3) Certain of the Solomon Islands (Bougainville, Buka, etc.) . . . . .				German Solomon Islands	
<i>Western Samoa</i> , comprising Savaii, Upolu, etc. . . . .	1,130 sq.mi.	Dec. 17, 1920	New Zealand	German Samoan Islands	German Empire
<i>Nauru</i> . . . . .	5,396 ac.	Dec. 17, 1920	British Empire, as represented by Great Britain, Australia, and New Zealand	Nauru	German Empire
<i>Pacific Islands North of the Equator</i> , comprising: (1) Marianne or Ladrone Islands (except Guam) . . . . .	245 sq.mi.	Dec. 17, 1920	Japan	No change	German Empire
(2) Caroline Islands, comprising the Eastern Carolines and Western Carolines, together with Yap Island and Pelew . . . . .	380 sq.mi.				
(3) Marshall Islands. . . . .	160 sq.mi.				



Lord Hailey (British), director of the African research survey, was appointed by the council in Sept. 1936 in the place of Lord Lugard, who had resigned, and in May 1937 Governor Augustin Giraud (French) was appointed in the place of M. Manceron, deceased.

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**Manganese.** The salient features of the depression drop and recovery for the various important producers and consumers of manganese are shown in the accompanying table. In production, points of note are the recent exceptionally heavy Russian outputs, the development of South Africa as a producer of major importance, and the failure of Brazil, Egypt and India to come back to their former levels.

On the consumption end, the United States is the only country which has shown a material increase in imports. Belgium, France, and Germany are well below the 1929 level, not because of any lowering of consumption demand, but as a result of a reduction in their former scale of stocking for future emergency need, a practice which had been maintained in these countries for several years. Another point of interest brought out by these figures is the status of the Russian output; the Soviet Union is the only important producer which is also a consumer on any appreciable scale, and since no other important consumer produces any significant amount, this means that, roughly speaking, the difference between the total output and the total consumer imports for any year is an approximate measure of the amount of the Russian output that has been retained within the country. Since 1934 this amount has been far in excess of any possible demand

World Production and Imports of Manganese Ore  
(In thousands of metric tons)

Output of Leading Producers					
	1929	1932	1934	1935	1936
Brazil . . . . .	316	37	7	61	166
Egypt . . . . .	191	..	1	87	100
Gold Coast . . . . .	415	52	345	405	417
India . . . . .	1,010	216	413	652	826
South Africa . . . . .	9	..	66	95	258
U.S.S.R. . . . .	1,415	832	1,821	2,384	3,002
Others . . . . .	483	169	312	407	465
Totals . . . . .	3,840	1,305	2,905	4,092	5,234
Imports of Leading Consumers					
	1929	1932	1934	1935	1936
Belgium . . . . .	329	154	206	242	154
France . . . . .	801	349	583	372	421
Germany . . . . .	390	107	225	394	230
United Kingdom . . . . .	294	80	205	232	245
United States . . . . .	671	92	347	390	860
Others . . . . .	550	147	426	536	556
Totals . . . . .	3,035	929	1,992	2,166	2,466
Difference . . . . .	805	376	913	1,926	2,768

the local steel industry, indicating production that is much greater than the demand, and leading to the assumption that large amounts are being held in stock. This same conclusion is indicated by a comparison of production with exports, which declined heavily in both 1935 and 1936, in the face of large increases in production, leaving surpluses of the same order of magnitude as those indicated above. (G. A. Ro.)

**Manitoba,** mid-continent Province of Canada and the oldest and most easterly prairie Province; area: 251,832 sq. mi. (27,055sq.mi. water); population (census of Manitoba, 1936), 711,216. Capital, Winnipeg, 215,814. Of the Province's population 310,927 are urban, or 44%; British racial origin,

362,389; Ukrainian, 86,982; German, 52,450; French, 47,683; Polish, 35,136; Scandinavian, 21,504; Dutch, 25,521; others, 66,120.

**History.**—Manitoba became the fifth Province of Confederation in 1870, and in 1930 received control of its natural resources and thus equality of Provincial status. The legislature was bicameral until joint action of the appointed and elected chambers in 1876 did away with the former. In 1890 the use of English as the only official language was approved by law, and the public school system was made non-sectarian. In 1900 Manitoba succeeded in securing abolition of the monopoly clause in the C.P.R. charter. In 1916 the legislative assembly led in Canada in enfranchising women. The present legislature consists of 55 members, with the Government headed by Hon. John Bracken, premier since 1922. The lieutenant-governor is Hon. William J. Tupper. Manitoba elects 17 members to the House of Commons of Canada, and has six representatives in the Senate.

**Education.**—Public, elementary and secondary schools are maintained by general taxation, with the Manitoba University, including a faculty of agriculture, and affiliated colleges, providing for higher education. There are also several other colleges and schools.

**Public Welfare.**—A provincial Department of Health and Public Welfare administers the following statutory services: child welfare, hospital aid, marriage, mental diseases, municipal hospitals, public health, venereal diseases, sanatorium, and vital statistics. The Government maintains three public health institutions for mental diseases, juvenile courts, jails, and in addition there are many Government-assisted and private charity and relief services.

**Banking and Finance.**—Winnipeg, the financial centre of Western Canada, is the western headquarters of eight of the 12 Canadian banks, and of insurance, mortgage and financial institutions. For 12 years to 1932, savings offices were maintained by the Government.

**Agriculture, Manufactures, and Mineral Production.**—The gross total value of products of manufacturing industry in 1935 is estimated at approximately \$118,000,000, and the output has been maintained since, with an increasing production of minerals, totalling \$11,500,000 in 1936. Furs, fisheries and forests also yield important returns. The Province has an abundance of low-cost electrical power, developed at several points on the Winnipeg river. The railway mileage is Canadian Pacific Railway, 2,697, and Canadian National, 2,985, the latter including the 510mi. of line from The Pas to Churchill on Hudson bay, whose coast for 400mi. forms part of the northern boundary of Manitoba. There are 4,200mi. of Government-maintained provincial highways. (W. J. HE.)

**Maple Sugar.** Production of maple sugar and maple syrup in the United States in 1937 was 990,000lbs. of sugar and 2,562,000gals. of syrup from 11,739,000 trees tapped. In 1936 the yield was 1,042,000lbs. of sugar and 2,358,000gals. of syrup from 11,861,000 trees tapped; in 1935, 1,704,000lbs. of sugar and 3,377,000gals. of syrup from 12,496,000 trees. One gallon of syrup is equivalent to 8lbs. of sugar. In Canada production entirely in terms of sugar has averaged around 28,000,000lbs. the last three years, with an annual value of about \$3,500,000. Approximately three-fourths of Canadian maple products are from Quebec, about one-fifth from Ontario and the rest from the Maritime provinces. In the United States nearly one-half the "sugar" trees tapped are in Vermont, where 5,384,000 trees yielded 417,000lbs. of sugar and 991,000gals. of syrup in 1937. Other maple sugar States in order of production are New York, 3,051,000 trees; Ohio, 1,180,000 trees; Pennsylvania,



518,000 trees; Michigan, 403,000 trees; New Hampshire, 375,000 trees; Wisconsin, 280,000 trees; Maine, 268,000 trees (farm only); Maryland, 58,000 trees. (S. O. R.)

## Marble and Granite.

Sales of marble as building and monumental stone cover on the average about 60% of the United States output, the other 40% being the scrap material. Sales declined steadily from 600,000 short tons in 1927 to a minimum of 132,000 tons in 1935, and recovered to 166,000 tons in 1936, most of the increase being in building stone. Granite shows a somewhat better record, having declined from 10,827,000 short tons in 1929 to 4,442,000 tons in 1933, with a recovery to 13,878,000 tons in 1936, the output having more than doubled in that year. Crushed and broken stone (concrete aggregate, road metal, railroad ballast and riprap) make up 90–95% of the total tonnage; dimension stone for building and monumental work, curb and paving blocks, are only a small percentage on a tonnage basis, but account for half or more of the total value.

Marble has only a small output in Canada, which declined from 26,100 short tons in 1930 to 10,900 tons in 1933, recovering to 20,500 tons in 1936. Granite production suffered heavily, dropping from 1,851,000 tons in 1930 to 257,000 tons in 1933, and recovering only to 856,000 tons in 1936.

British marble is not of commercial importance, most of the supply being imported. What is often termed marble is merely grey limestone patterned with fossils when polished. The amount of limestone used for building and monuments increased from 198,000 in 1930 to 261,000 tons in 1935 although the value decreased from £327,000 to £225,000. Granite (igneous rock) with an output of 8,454,000 tons valued at £3,078,000 in 1930 reached 9,193,000 tons valued at £3,344,000 in 1935, but some of the increase was due to inclusion of the product of North Ireland.

(G. A. Ro.)

## Marconi, Guglielmo Marconi,

MARCHESE (1874–1937), Italian inventor; born at

Bologna, April 25. Senator Marconi's successful experiments with short-wave wireless transmission at Poldhu during 1923–24 led to the British Government's acceptance of his short-wave beam system for imperial communications. In 1931 and 1934 the marchese achieved successful results with still shorter waves, of less than a metre in length. Marconi joined the Fascist Party in 1923, and became a firm friend of Signor Mussolini, who appointed him a member of the Fascist Grand Council; and in 1930, though senators were not admissible to the honour, he was made a member of the Italian Royal Academy, of which he subsequently became president. Marconi was created a marchese in 1929; and among his other honours were the Order of St. Maurice and St. Lazarus, the Civil Order of Savoy, the Grand Cross of the Order of the Crown of Italy, and an honorary G.C.V.O. In 1934 he was elected rector of St. Andrews university, but had not, at the time of his death, been installed in that office. He died near the Piazza di Spagna, July 20, 1937. For details of his life see *Encyclopædia Britannica*, vol. 14, pp. 869–70.

## Marine Biology.

There is no single medium which acts as a clearing house for the reports of the activities and investigations of more than 240 marine institutions of the world. Probably one of the most interesting developments, however, concerns the continued use of the "bathysphere" in the explorations of the superficial and deeper recesses of the sea. In a comparatively small volume of water about eight miles wide and about half a mile deep, off the Bermuda Islands, scientists have already found representatives of about one-third of all the now known species of sea life. The principle of the "bathysphere" has

been pronounced "the greatest invention since the diving suit."

Interesting also is the exploration of the polar seas by the expeditions of the Russian Government; the establishment of the polar station on the ice-floe; and the building of two new marine biological stations, by U.S.S.R. Academy of Sciences. One of these is located at Murmansk, the other at Dalnye-Zelenets bay east of Kola bay. These two stations are designed to be among the finest of their kind in the world. Likewise the British Government has established a new Bermuda oceanographical station, the central problem being the study of the pulses of the Gulf stream in relation to marine life.

Two Pacific expeditions were completed during 1937. One of these, sponsored by the American Museum of Natural History, spent four months in marine collecting and research off South America. A similar interval was spent by the sixth Hancock Pacific Expedition off the coast of Central America. Rare and unknown specimens have been distributed to various institutions of the United States. A long series of sea explorations known as the Marion and General Greene Expeditions, to Davis strait and Labrador sea, under the direction of the U.S. coast guard, have just been completed.

A most valuable scientific contribution during the year was a volume published by the National Academy of Sciences in Washington, D.C., on the international aspects of oceanography, which gives not only a review of the physical aspects of the sea, but includes a complete catalogue of all marine biological stations, reviews their history, location, organization, scope of program and provision for publication as well as other useful information. A twenty-five-year study on salinity and temperatures of the English channel has been released by the Ministry of Agriculture and Fisheries of Great Britain, while the last report of the Permanent Council for the Exploration of the Sea includes studies in rheotaxis, geotaxis, phototaxis, habitats, and nutrition.

Experimental techniques promise to influence contemporary biological thought profoundly. In experimental embryology it was found that sea-urchin eggs when subjected to high centrifugal force (10,000X in sucrose solution) tend to break into nucleated and non-nucleated halves. The non-nucleated halves when treated with parthenogenic agents undergo cleavage and develop into blastulae.

Progress was also made in ecology on the colour adaptive mechanisms in certain marine fishes. In a series of experiments it was found that fishes with the most perfect adaptive mechanism suffered least from predatory foes when placed upon unfavourable backgrounds. Thus the "protective colouration hypothesis" is an operative mechanism in nature has a champion in fact. Recent research shows that bacteria play an important rôle in the nutrition of marine animals. The bacteria utilize the dissolved organic matter of the sea-water and then are ingested by other organisms.

(F. M. B.)

## Marine Corps,

an integral part of the U.S. Navy, is organized and trained on military lines to fit it especially for duty in the naval service both at sea and ashore. The corps dates from Nov. 10, 1775, when it was authorized by the Continental Congress, and in Dec. 1937, consisted of 1,185 commissioned officers, 147 warrant officers, 17,000 enlisted men.

The ranks of officers correspond to those of the Navy, but the titles are those of the Army, from second lieutenant to major general. Marines, 255 officers and 5,950 enlisted men, garrison 34 shore stations, 24 within continental limits and 10 overseas and 109 officers and 2,500 enlisted serve as part of the crews of 48 sea-going battleships and cruisers of the Navy. The fleet marine force is organized, equipped and trained for service with the sea-going fleet, acting as a landing force to seize, defend



and maintain temporary bases that the fleet will require in overseas operations. This force accompanies the fleet on manoeuvres assimilating war conditions. The two brigades of the fleet marine force consist of infantry, artillery, aviation, anti-aircraft batteries, chemical companies, engineer companies and tank companies; total peace strength 300 officers and 4,000 enlisted. Boats designed for landing the fleet marine force on hostile shores are provided.

During the year 1937 an important mission of the Marine Corps has been the protection of American lives, interests and property in China during the Japanese attacks upon China. The U.S. Embassy guard, at Peiping, 20 officers and 500 enlisted, has been maintained in accord with treaty stipulations since the Boxer Rebellion of 1900. In addition to the Embassy guard, a marine brigade, 130 officers and 2,600 enlisted men, has been on temporary duty at Shanghai.

The 14 aircraft squadrons of the Marine Corps, 120 officers and 1,100 enlisted men, form part of the fleet marine force. They are based on marine barracks, Quantico, Va., naval air station, San Diego, Calif., and St. Thomas, Virgin Islands, and move with the fleet base force as required by the needs of the U.S. fleet. Officers and enlisted marines are given specialist courses at six marine schools, and 48 army and navy schools. Officers are commissioned from graduates of the Naval academy and distinguished military colleges and from qualified enlisted men.

The U.S. Marine Corps is in fact a small, compact, highly mobile, self-contained military force of all arms especially adapted for service in the Navy, both at sea and on shore in support of the active operations of the U.S. Fleet. (D. Wt.)

**Marine Insurance.** In this review marine insurance is confined to insurance on hulls and cargoes which is the portion of the business generally considered as marine insurance elsewhere in the world, but which is only a part of the wide variety of classifications included in 33 of the 48 American states. Hull business will show a loss in 1937. The results were bad at the beginning of December, and then came the total loss of the "President Hoover" on which about \$3,000,000 was placed locally. Earlier in the year the sister ship, the "President Coolidge," was in collision with the tanker, "Frank H. Buck," resulting in a total loss of the latter vessel. Another total loss was the "Cauto" in November. Many other losses during the year brought the total to more than the income received. While the cargo business may not have been as bad as the hull business, it was not good. The year began with the West coast strike in full blast; this later spread to the Atlantic and Gulf coasts. All ships, both foreign and coastwise, on the West coast were tied up for weeks and in the East the coastwise and inter-coastal ships suffered badly. Shipping suffered more from strikes in 1937 than in any other year in U.S. history.

In addition the following are some of the disasters which caused heavy losses in 1937: from burning: the "Sandgate Castle," the "Silvercypress," the "Silverlarch," and the "Fijian" from an explosion destroying ship and cargo; from sinking: the "Quarrington Court"; from stranding: the "Johanna Thorden," the "Tristo," and the "Nashaba"; from collision: the "Elstree Range" and "Southern Prince," the cargoes being badly damaged, the "Edward Luckenbach" and the "Feltre," the latter a total loss. The foregoing are only a few of the many casualties which made up a disastrous total for underwriters in 1937.

(S. D. McC.)

**Great Britain.**—In the marine insurance market by far the most important event of 1937 was the agreement made by the marine insurance companies and Lloyd's underwriters in Decem-

ber, confining the cover of the marine war risk policy on cargo to the period during which the merchandise is actually in the vessel in which it is carried overseas, the customary period of cover on shore prior to loading and after discharge being eliminated.

During 1936 Lord Merrivale, Mr. Justice MacKinnon, and Mr. Justice Branson had each uttered criticisms of the system which permitted ships to be insured for amounts far in excess of their actual values.

A Board of Trade Committee appointed to inquire into the system of valuing ships for insurance in the light of these judicial criticisms issued a report early in 1937, but the report stated that the matter was one not of public urgency and that the judicial strictures were directed mainly against theoretical possibilities. Moreover by the time the report was issued, the circumstances which had provoked judicial criticism had disappeared. The value of tonnage had increased with improving trade to such an extent that many ships were under-insured. (D. K.-P.)

**Market Gardening.** In both the United States and Great Britain 1937 saw a further trend, induced by recent droughts, toward achieving greater independence of weather conditions in market gardening. In the United Kingdom there was a continuation of the recent development to divide the vegetable-growing industry into two specialized groups, one growing the commoner types of vegetables in open fields and the other raising the salads, sea kales and other crops under glass. In the United States, owing to repeated droughts in humid as well as the semi-arid areas since 1930, there was an increase in irrigation among gardeners in humid regions where usually normal rainfall has been generally sufficient. The number of acres irrigated in 17 humid north central and eastern states was 11,396 in 1931 and 32,960ac. in 1936, according to estimates by the American Society of Agricultural Engineers while the U.S. Bureau of Agricultural Engineers reported 63,000ac. of irrigated land in Florida.

A severe drought early in 1937 reduced the vegetable acreage and halted the expansion of vegetable gardening that has been in progress in England in recent years. This set-back is believed only temporary as there was an increased use in 1937 of glass frames and greenhouses in producing early salads, radishes, carrots and cauliflower and there was practical progress in methods of converting waste vegetable matter into humus for fertilizer, since chemical fertilizers are alone insufficient. There is an absence of animal fertilizer because many gardens do not use horses in cultivation. Composting is now an established practice.

While the great bulk of vegetable crops grown in the United States is produced in open fields (*see TRUCK FARMING*) there is a large industry specializing in winter crops raised under glass, especially tomatoes, cucumbers and lettuce, and in growing early seedlings for transplanting. The industry is so large it has a nation-wide trade organization, the National Association of Hot House Vegetable Growers.

Market garden experiments in the use of electricity reported activities in three different directions in 1937 in the United States. I. C. Hoffman of the Ohio station reported at the annual convention of the Vegetable Growers' Association of America, December 13-16 in New York city, that electric lighting materially increased the earliness of a spring crop of tomatoes. Reports on experiments in using electricity for bottom heat in cold frames and hot houses were not conclusive. Some growers reported that the cost of electric current was too high to make this form of heating profitable, while others reported practical results. The committee on the Relation of Electricity to Agriculture issued a report in July on the adaptability of electric power to irriga-



tion in U.S. humid regions and methods of irrigation suitable under different conditions. Methods in common use include spray irrigation systems, with either revolving sprinklers, or low-pressure perforated pipe, or overhead sprinkler systems, or eyelet hose; surface irrigation systems, either furrow or flood; porous hose; subsurface irrigation systems, either ditch or pipe.

Hot house production of vegetables has resulted in a number of improved types of vegetables. The Cheshunt Research station, England, has introduced two new varieties of lettuce for production under glass and the Seale Hayne college has introduced stocks of winter broccoli for Devon and Cornwall, the latter of which produced approximately 40,000 tons of broccoli in 1937.

## Marketing.

The wholesaler-retailer system continues as the channel through which nearly three-fourths of all consumer goods reach the public. The belief frequently expressed by many business writers in the 1920's that the wholesaler-retailer system might be displaced has not materialized, nor is there any likelihood that it may do so.

The direct distribution systems including the department stores, mail order houses and chain stores have similarly held their own not only in volume of sales but in the service rendered to the consuming public through competition in regulating prices and conditions of purchases.

Consumers' co-operatives, an important factor in the distribution of goods in several European countries, are still insignificant in the United States in volume of business transacted, although public interest in this form of distributive ownership and control seems to be growing. House-to-house selling as a channel of marketing has always been and is still important in the sale of many commodities of common use, such as fresh fruits and vegetables, milk and other food products. The extent of house-to-house distribution in other lines of goods varies with business conditions. The numbers engaged in house-to-house selling tend to increase as general business conditions decline, and, tend to fall when business conditions improve.

The use of advertising and other aids to marketing continues at intensified rates. Perhaps the most outstanding changes in recent advertising have been to use more and better illustrations, more complete descriptions and better copy writing. The recent extensions of the use of radio for advertising purposes particularly in America is especially noteworthy. Under the rising competition of radio, advertising by newspapers, periodicals and other advertising media have been hard pressed to maintain their former positions.

The even balance of the various marketing systems competing for consumers' trade is being threatened by new competitive devices recently introduced by factors from the wholesaler-retailer system. It has been discovered that the numbers of small concerns engaged in wholesaling and particularly in retailing dependent upon wholesalers for their sources of supplies have, when organized and directed, a political potential useful in setting up disadvantages for their competitors and in securing special privileges for themselves. The movement is still new, but if it succeeds it may restrict or destroy the further normal development of direct distribution through department stores, mail order houses, and, particularly chain stores.

Similar attempts to curb direct distribution have taken place in several European countries usually in the form of prohibitions upon further growth or expansion. In the United States such attacks made commonly take the form of discriminatory regulation and taxation through State and municipal legislation. Since the beginnings of such attempts made back in the middle 1920's, there has been a rush towards these methods. In the period from 1925 down through 1937, more than 900 bills including such pro-

posals were introduced, of which 50 have been enacted in 27 different States.

The discriminatory tax proposals enacted against direct distributors have taken several forms, such as licence taxes graduated in amount according to the number of stores or units operated, gross sales taxes, graduated in amount according to the volume of total sales, and sales area taxes graduated in amount according to the floor space area of the store or stores owned. Clearly, such taxes may be highly effective in crushing competitors. The department stores, mail order houses, and chain stores obviously depend for their economical operation upon the volume of their sales. By starting such taxes at nominal rates for small concerns that make their purchases through wholesalers, and then increasing them abruptly for concerns who make their purchases directly from producers, such taxes may, in fact, not merely restrict but actually destroy.

In the legal tests made against these types of discriminatory taxation, the courts have upheld the graduated licence tax, but have rejected the graduated gross sales tax. Licence taxes graduated in amounts depending upon the number of stores operated are now in force in 22 states. Some of these tax provisions are mild in effect, others are sufficiently heavy to be confiscatory.

In addition to the discriminatory tax schemes referred to above representatives of the wholesaler-retailer system, with the cooperation of politicians, have to date secured the passage of price maintenance laws in 42 states and of still other laws regulating or prohibiting sales below costs, including expenses of distribution, in 23 states. These two types of legislation are publicly termed "fair trade laws" and "unfair practice acts." There has likewise been an effort to prohibit differentials in purchasing prices and other considerations ordinarily based on difference in quantities bought, in what is known as the Robinson-Patman Federal Act of 1936.

These measures whose purpose it is to restrict and hamper direct distribution are certain to have other effects besides those sought by their promoters. With the competition of direct distribution restricted, there will be less reason for intense effort now being made to render efficient service and keep prices down. Increases in prices may prove to be a vital matter to ultimate consumers. Thus, this movement organized and promoted to serve one system of distribution as against its competitors may prove contrary to the public interest. Whatever the legislature may direct and the courts decide as to the permissibility of such competitive manoeuvres, it seems likely that the matter will probably have to be settled in the final courts of public interest. These issues growing out of this new method of competition of the major marketing systems are almost certain before long to become major political questions. Consumers will have to decide by ballot as well as by patronage on what marketing institution and what channels of trade they may want preserved for their service. (See also MAIL ORDER BUSINESS; RETAIL SALES.)

(P. H. N.)

## Marketing Boards.

Agricultural marketing boards in Great Britain are bodies set up by producers of agricultural products with the object of securing the advantages of large-scale organization. They derive their status in law and their functions from schemes framed and submitted under the Agricultural Marketing Acts, 1931 to 1933. The initiative in the submission of schemes must come from persons substantially representative of the producers of the product concerned. Every scheme requires the approval of the appropriate Minister, who must give opportunity for objections and may modify the scheme, and also of Parliament. When thus approved, a scheme comes fully into force only if, in the suit-



sequent poll, votes representing two-thirds of the producers and two-thirds of the quantity of the product are given in favour of it.

Public safeguards are provided in the form of (1) Consumers' Committees, whose duty it is to consider and report to the minister on the effect of schemes on consumers and on any complaint as to the effect of schemes on consumers; (2) Committees of Investigation, whose duty it is to consider and report on matters referred to them by the minister; these may be reports by Consumers' Committees or complaints made to the minister by persons other than consumers. After an adverse report by a Committee of Investigation, the minister may revoke a scheme, amend it, or require the board to rectify the matter in complaint. In the case of revocation, the minister's order must be approved by each House of Parliament; in the other two cases, the order must be laid before each house and may be annulled by either.

A further public safeguard lies in the power of the minister, on his own initiative, if he is satisfied that any provision of a scheme or any act or omission of a board is contrary to the interest of consumers of the regulated product or is contrary to the interest of a substantial number of persons affected by the scheme and is not in the public interest, to make an order revoking the scheme, subject to the approval of each House of Parliament.

Within this general framework, schemes differ according to the selection made by the promoters from the variety of powers with which, under the acts, a board may be endowed. The selection is naturally governed by the circumstances obtaining in the case of each product. A board may, for instance, be solely a trading body, or it may exercise only regulatory functions; or, again, it may be a combination of the two types. All-embracing, producer-controlled organizations of this kind, authorized under statute to regulate the marketing activities of their constituents, are new to British agriculture. They may be said to carry to a logical conclusion the voluntary movement for the co-operative marketing and standardization of agricultural products which has gone far in other countries, and, for some commodities, has made steady progress in England. They reflect the tendency towards regulation in economic affairs. It may be noted that under the Agricultural Marketing Act, 1933, imports may be regulated in conjunction with a marketing scheme.

Eight schemes are in operation in Great Britain. The hops scheme is an example of the trading type. All hops are sold through the Hops Board, and the proceeds are pooled and divided among growers according to quotas allotted to them on the basis of past performance. The stability which the scheme has introduced has been assisted by a five-year price and supply agreement between the board and the brewers.

The potato scheme, on the other hand, is regulatory in character. Its purpose is to stabilize prices. In order to assist the adjustment of supply to demand, each producer is allotted a basic acreage, and is liable for a non-recurring payment of £5 per acre if he grows potatoes in excess of that acreage. In addition, the board determines, from time to time, the minimum size of potatoes that may be sold. The board has paid special attention to the development of an effective market intelligence service.

The pigs marketing scheme and the bacon marketing scheme, together with a bacon development scheme under the act of 1933, are part of one and the same plan, the main purpose of which is to adjust an expanding home production to the requirements of a market which is quantitatively regulated under the act of 1933. The schemes recognize that a market for a manufactured product such as bacon cannot be built up on fluctuating supplies of raw material. The schemes therefore encourage the sale of pigs to bacon curers on annual contracts at prices so varied as to induce the production of the qualities required in level quantities through-

out the year. Since the schemes have been in operation, the output of home-produced bacon has doubled. Owing to the sudden increase in the cost of animal feeding-stuffs, no contracts were operative in 1937.

The milk scheme of England and Wales, with its 150,000 registered producers and its annual turnover of over £40,000,000, on wholesale account, is the giant among the marketing schemes. The pivotal function of the board is the prescription of the terms on which milk may be sold. It is a party to all wholesale contracts, and the money received for milk sold under such contracts is payable to the board by the buyers. The central feature of the scheme is the payment of these moneys into regional pools, adjustments being made between pools to even up returns.

The annual value of the products covered by marketing schemes is in the neighbourhood of £100,000,000, or over one-third of the total annual value of home agricultural produce. No scheme is yet six years old, and marketing schemes are still, to some extent, to be regarded as experimental; but whatever changes lie in the future, the principle of all-inclusive organization is likely to endure.

**Marquis, Donald Robert Perry** (1878-1937), American humorist, poet and playwright, was most widely known as creator of archy, the cockroach, and mehitabel, the cat. These famous companions of the lower case inaugurated as fillers for a daily column surpassed even the successful play, *The Old Soak*, in popular favour. Marquis' best known poems and plays are listed in the *Encyclopædia Britannica*, vol. 14, p. 939. Unfortunately his work came to an abrupt halt in 1932 when a brain haemorrhage left him totally blind for a time. Another attack in February, 1936, rendered him a helpless invalid, although he did not succumb until Dec. 29, 1937 at his home in Forest Hills, N.Y.

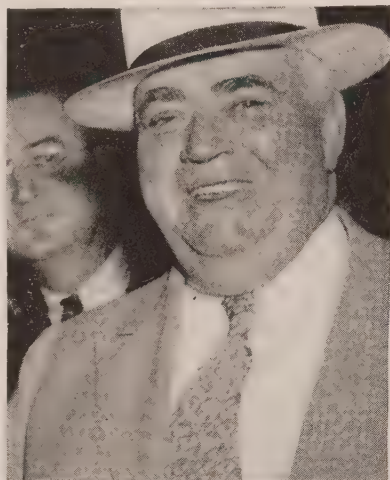
**Marriner, James Theodore** (1892-1937), American diplomat, was born in Portland, Me., March 27, 1892. Having received a Ph.D. degree from Harvard four years after graduation from Dartmouth in 1914, he entered the diplomatic field by assuming minor posts in the Swedish and Rumanian legations. After three years of service with the Western European Division of the Department of State (1923-1926), he became secretary of the Swiss legation and served as a United States member at several disarmament conferences. He returned to Washington in 1927 as chief of the Division of Western European Affairs, but left this post in 1931 to become counsellor of the Paris embassy. It was while serving in his most recent post of consul-general at Beirut, Syria, that he was assassinated on Oct. 12, 1937 by a crazed Armenian.

**Martinique**, French West Indian colony; language, French; capital, Fort-de-France; Governor, I. B. Alberti. The area is 380 sq.mi.; the population by the 1936 census was 234,505. The chief cities are: Fort-de-France, the capital (pop. 48,395); Le Lamentin (pop. 16,303). Martinique is administered by an appointed governor and an elected council and has representation in the French Parliament. During 1937, French laws of 1936 concerning agricultural moratoriums and arbitration of labour disputes were extended to Martinique by decree. Fort-de-France has direct steamship connections with France and with other parts of the West Indies, and air connections with New York. Martinique has 600km. of automobile highways, with 200km. of exclusively freight railroads. Imports and exports (1936) aggregated in value 155,632,000 francs and 191,143,000 francs against 140,041,000 and 165,590,000 francs in 1935. The chief exports are sugar, rum, and bananas, practically entirely to



France. Foodstuffs, tobacco, lumber, and textiles, are imported, with 66% supplied by France. Approximately 45,000 ac. of sugar cane is cultivated. Refining is done by 19 sugar-mills, capitalized at 50,000,000 francs. There are two rum distilleries. The monetary unit is the French franc (value: 3.46 U.S.). Martinique has 118 primary schools, and several secondary and technical schools, with 12,000 students. Fort-de-France is the French West Indian naval base and military headquarters.

**Maryland**, usually called the "Old Line State" and more recently the "Maryland Free State," lies on the Atlantic seaboard between Pennsylvania on the north and Virginia on the south. The total area is 12,300.21 sq.mi. of which 2,429.89 are water, mostly the Chesapeake bay and its tributaries. Population (U.S. census 1930) 1,631,526; (estimate July 1, 1937) 1,679,000. Under the 1930 figures, the population was subdivided between 1,259,077 native born whites, 276,379 negroes and 95,093 foreign born. Of these 974,869 were urban and 656,657 rural. Annapolis, with a population of 12,531 is the capital. Other large cities and their population (1930) were Baltimore (862,059), Cumberland (37,747), Hagerstown (30,861), Frederick (14,434) and Salisbury (10,997). The birth rate for 1937 (9 months) was 15.8; white 14.9; negro 20.4. The death rate for 1937 (9 months) was 12.7; white 11.9; negro 16.7. Infant mortality: 1937 (9 months) 63.1; white 52.6; negro 100.1.



HARRY W. NICE, governor of Maryland

**History.**—State officials: governor, Harry Whinna Nice (Rep.); comptroller, William S. Gordy, Jr. (Dem.); attorney-general, Herbert R. O'Connor (Dem.). All terms expire Jan. 1939. The State budget for the fiscal year Sept. 30, 1937 to Sept. 30, 1938 was \$35,359,802 plus \$2,666,013 from Federal sources and \$2,300,000 from bond issues. The funded debt as of Jan. 20, 1938 was \$46,512,000.

The legislative session of 1938 passed Maryland's first income tax law ( $\frac{1}{2}$  of 1% on all incomes with the same exemptions, generally, as provided by Federal law); strengthened and enriched the University of Maryland; added to the powers and area of the Washington Metropolitan District Commission in order to provide for growth of Washington suburbs; provided for State use of prison-made goods; incorporated the town of Greenbelt, Prince George's county, a \$15,000,000 Federal Housing project; authorized the creation of housing authorities with condemnation powers by incorporated cities; and provided for a new State office building at Annapolis. The year saw, also, the completion as far as Havre de Grace of the new dual highway between Baltimore and Philadelphia and some progress on a similar modern road from Baltimore to Annapolis.

The State Planning Commission published its report on the future development and use of the varied area in the Baltimore, Washington, Annapolis triangle. President Roosevelt opposed a scheme to bridge the Chesapeake bay from a point just east of Baltimore to the eastern shore, but other similar schemes were still being discussed. Widening to 250 ft. and deepening to 27 ft. the canal connecting the Chesapeake and Delaware bays was approximately completed (Jan. 1938). Deaths by automo-

biles on Maryland roads totalled 590 in 1937 as opposed to 490 in 1936. Public elementary and high school enrolment was (1936-37) 348,386 of which 58,376 were negroes.

**Banking and Finance.**—Banks and trust companies in the State (124) showed total resources (June 30, 1937) of \$330,311,460.74 as compared with \$314,821,070.49 in 1936. Total deposits on June 30, 1937 were \$279,653,743.22, as compared with \$265,633,357.08 on June 30, 1936. Mutual savings institutions reported deposits of \$221,187,472.64 on the same date. There were no bank failures in 1937. Of \$50,320,000 impounded in the crash of 1933, \$22,794,220 had been paid to depositors as of June 30, 1937.

**Agriculture, Manufactures, Mineral Production.**—The total acreage, all crops, in 1936 was 1,697,610, with an estimated value of \$55,465,000. Livestock and dairy products bring in annually about \$60,000,000. Oyster production, 1936-37 was 3,081,068 bushels; crabs: hard (1936) 144,491 bbl.; soft 10,493,615.

Maryland's coal mines produced 1,708,231 net tons in 1936 and 1,281,000 net tons in 1937 (Jan.-Oct., inc.). Other minerals: lime and lime-stone, \$600,000; slate, \$200,000; miscellaneous stone, \$118,000; granite, \$125,000; basalt, \$265,000; asbestos, cement, raw clay, talc, feldspar, etc., \$1,500,000 (all figures 1935). The total value of manufactured products in 1935 was \$757,852,170 in 2,697 plants. (H. Ow.)

**Masaryk, Thomas Garrigue** (1850-1937), founder and first president of Czechoslovakia as well as a philosopher and sociologist, was born in the Moravian border-town of Hodonin, March 7, 1850. Son of a coachman, he studied philosophy at the Universities of Vienna and Leipzig and at the latter met his future wife, an American. For several years his time was devoted to producing philosophical treatises, but he was elected to the Austrian *Reichsrat* in 1891 and became a nationalist leader. The World War provided an opportunity to publicize the cause of the Czechs on an international scale. This work was climaxed in 1918 when Czechoslovakia was declared an independent nation. Local recognition of his services came with successive elections as president until his resignation in Dec. 1935. Despite many political disagreements among the Czechs, he remained a subject of national reverence until his death at Prague, Sept. 14, 1937. A more complete discussion of his life may be found in the *Encyclopædia Britannica*.

**Masonry:** see FREEMASONRY.

**Masood, Sir Syed Ross** (1889-1937), Indian Moslem educationist; born February 18, 1889. He was educated at the Aligarh university (then the Mohammedan Anglo-Oriental college) and New college, Oxford, and was called to the Bar by the Middle Temple. After being headmaster of the Patna Collegiate school, and professor of history at the Ravenshaw college, Cuttack, he was, from 1916 to 1928, director of public instruction in Hyderabad. For his services in this capacity the Nizam conferred upon him the title of Nawab Masood Jung Bahadur. In 1929 he became vice-chancellor of the Aligarh university. He was knighted in 1933, and from 1933 till his death was Minister of Education on the Executive Council of Bhopal. His chief publications were *Japan and its Educational System* and (in Urdu) *Intikhab-i-Zarrin*. He died at Bhopal, July 30, 1937.

**Massachusetts**, one of the thirteen original States of the United States, popularly known as the "Bay State"; area, 8,266 sq.mi.; population according to U.S.



census of 1930, 4,249,614, estimated by U.S. Census Bureau, July 1, 1937, 4,426,000, estimated Jan. 1, 1938, 4,435,000; capital, Boston, population (1930) 781,188, estimated Jan. 1, 1938, 810,000. Of the State's population (1930) 1,931,418 or 45% live in the cities; 4,192,926 whites, 52,365 coloured; native born, 3,194,978; foreign-born, 1,054,636.

**History.**—For the third successive biennium the government of Massachusetts is entrusted to an executive department predominantly Democratic and a legislative department decisively Republican. Inaugurated on Jan. 6, 1937, for a two-year term were the following elective officers of the commonwealth: governor, Charles F. Hurley, D.; lieutenant governor, Francis E. Kelly, D.; secretary, Frederic W. Cook, R.; treasurer, William E. Hurley, R.; attorney-general, Paul A. Dever, D.; auditor, Thomas H. Buckley, D. The legislature, also elected for two years, consists of a Senate of 40 members, 27 Republicans and 13 Democrats, and a House of 240 members, 136 Republicans and 104 Democrats.

The legislative session, which began Jan. 6, continued without interruption until adjournment on May 29. During that time more than 2,500 petitions were considered. Several important bills were enacted into law. In one instance, it was voted to submit to popular referendum the question of biennial instead of annual sessions of the legislature. Thus will be settled in Nov. 1938, a question which long has agitated the commonwealth. If the people give their approval, sessions will be held every second year.

By another act, there was established for the State a pension system for judges. In the seven months of 1937 that this plan was operative, thirty-five justices took advantage of its provisions. The legislature also ratified inter-State flood compacts for the Merrimac and Connecticut valleys, created a commission to study communist, Fascist, and Nazi activities within the State, voted to permit absentee voting in town elections and abolished the law providing for pre-primary conventions of the major political parties. A move to abolish capital punishment was defeated, as were bills to legalize a State lottery, to tax chain stores, to impose a 2% sales tax, to ratify the national child labour amendment, and to bar married women from civil service positions.

The year witnessed a notable development of co-operative relations between Massachusetts and the other New England States. In consequence, joint action was inaugurated to promote the section's recreational activities, to find ways and means of combating disastrous floods along its two great rivers and to make easier the pursuit, capture and punishment of criminals.

In common with other States, Massachusetts continued to suffer from the effects of the depression. Although its great shoe and textile industries enjoyed reasonable prosperity in the spring and summer, they fell victims to the fall recession. As a result, the number of unemployed and partly employed was increased.

There was no State-wide election in Massachusetts during 1937, but mayors were chosen by a score of cities, and selectmen by hundreds of towns. Among the municipal elections, chief interest centred in the result in Boston where Maurice J. Tobin was the victor in a four-cornered contest for the mayoralty term of four years. Mr. Tobin was by far the youngest of all the candidates. He had been a member of the State Legislature and chairman of the Boston school committee. He is a Democrat.

**Education.**—According to the latest available statistics (the report of the commissioner of Education, for the year ending Nov. 30, 1936) the public day schools of Massachusetts have an enrolment of 758,351, with an average daily attendance of 673,277. In addition, there were 29,770 pupils in the public evening schools and 1,304 in the public vacation schools. The total amount of money appropriated for the support of the public



CHARLES FRANCIS HURLEY, governor of Massachusetts conversing with Mrs. Franklin Delano Roosevelt

schools was \$69,145,205, of which \$49,389,421 was devoted to the salaries of supervisors, principals and teachers and the sum of \$899,638 to textbooks.

Under the law education is free. It is compulsory for all between the ages of 7 to 14 years and required up to 16 years unless the sixth-grade work has been completed. Massachusetts maintains a State college at Amherst, a State nautical school, a school of art in Boston, three textile schools and teachers' colleges at Bridgewater, Fitchburg, Framingham, Hyannis, Lowell, North Adams, Salem, Westfield and Worcester. In addition it supports a division of university extension, and a division of vocational education. It also awards State scholarships to deserving students in several private colleges and universities. In the year ending Nov. 30, 1936, the State teachers' colleges had an enrolment of 2,544 women and 436 men. The number of people registered for university extension courses was 30,157.

**Charities and Correction.**—Supervision of the State institutions is divided among several departments. The commission of Correction has charge of the State prison at Charlestown, the Massachusetts Reformatory at Concord, the Reformatory for Women at Framingham, the State farm at Bridgewater and the Norfolk Prison Colony at Norfolk. Under the jurisdiction of the Department of Mental Diseases are State hospitals at Boston, Worcester, Taunton, Northampton, Danvers, Westborough, Medfield, Monson, Gardner, Waltham, Wrentham, Foxborough, Grafton, and Norfolk, as well as the Boston Psychopathic Hospital, the Belchertown State school, and the Hospital Cottages for Children at Baldwinville. The Department of Public Health supervises sanatoriums at Rutland, North Reading, Lakeville and Westfield and the Hospital for Cancer Patients at Pondville. The State infirmary at Tewksbury is the special charge of the Department of Public Welfare.

**Banking and Finance.**—The State commissioner of Banks has under his supervision a total of 828 institutions, including 193 savings banks, 74 trust companies, 213 co-operative banks, 334 credit unions and a few private banks. By the latest annual report of the commissioner (Jan. 1937) these institutions are shown to have assets of \$4,554,809,288. According to the report of the commissioner of Administration and Finance, the State's net direct debt at the end of 1937 stood at \$26,639,085. This represents a reduction of \$4,481,516 during the year. The leading sources of revenue for the fiscal year ending 1936 were motor vehicle and gasoline taxes (\$25,496,875), Federal grants (\$12,489,506), corporation taxes (\$12,031,426), assessments on cities and towns (\$10,000,012). Total receipts for the year were \$93,820,297; total expenditures, \$93,384,601.

**Agriculture, Manufactures, Mineral Production.**—Although primarily industrial in character, the Massachusetts economy in-



cludes a considerable agricultural production. Thus during the year 1936, according to the statistics of the United States Department of Agriculture, the State raised; 6,385,000lbs. of tobacco, 360,000bbls. of cranberries, 378,000bu. of grain corn, 254,000 short tons of silage corn; 1,716,000bu. of apples, 464,000 tons of hay, and 170,000bu. of oats. Its production of milk totalled 755,000,000lbs. and on its farms were 189,000 cows and calves, 95,000 hogs and 8,000 sheep which gave 42,000lbs. of wool.

With respect to manufactured goods, statistics for 1935 show the value of the State's leading products as follows: boots and shoes, rubber, \$21,574,887; boots and shoes, other than rubber, \$132,187,681; cordage and twine, \$14,514,163; cotton goods, \$109,508,920; electrical apparatus and supplies, \$83,188,097; furniture, \$19,250,801; jewellery, \$10,477,437; knit goods, \$26,661,041; leather, \$56,802,448; machinery, \$34,938,078; paper, \$52,683,867; rayon, \$30,551,562; wire, \$17,109,022; total, \$2,095,389,595. The number of industrial plants in the State at the end of 1937 was estimated at 8,500.

Fishing is still one of the State's great industries. In 1936 about 330,000,000lbs. of fish, valued at \$9,000,000 entered the ports of Boston and Gloucester and were distributed therefrom.

The chief mineral products and their 1935 values were: coke, \$6,048,544; clay, \$883,797; lime, \$642,755; sand and gravel, \$831,103; and stone, \$3,204,858.

(H. T. C.)

## Massachusetts Institute of Technology.

In 1937, for the first time since early in the depression period, attention at the Massachusetts Institute of Technology was turned from an almost exclusive consideration of problems of internal co-operation and efficiency toward an extensive program of objectives.

Of major importance were plans for expanding the physical plant. These were inaugurated with the sale of the original Boston site, and the decision to erect a large wing to the main institute group. At the same time ground was broken for a new air-tight steel shell to house the 10,000,000 volt electrostatic generator, important for nuclear research. Also started was a wind tunnel of unique design, capable of developing wind velocities of 400m.p.h. and simulating atmospheric conditions at altitudes of 35,000ft. and a propeller testing tank. A final important addition to plant resulted from the purchase of a neighbouring apartment hotel, admirably suited for conversion into a spacious graduate house.

Of possible far-reaching significance was the recognition of a new practical approach to biological and medical problems, involving the co-operative effort of biologists, chemists, physicists, and engineers, by the inauguration of a program designated as biological engineering. A feature of this program which aroused wide interest, was the successful design and construction for a Boston hospital of the world's most powerful electrostatic X-ray generator.

Particularly important to industry was the creation, as a public service, of an industrial relations section, the objectives of which are the collection, classification, dissemination, and interpretation of facts of experience in the field of employer-employee relations.

(K. T. C.)

**Mathematics.** In surveying the development of mathematics during a short period of one year it is usually easier to point out general trends rather than to pick out separate facts. The year 1937, presented an exception since a decisive step was made toward a solution of one of the most famous and difficult problems of Number Theory, known as the Goldbach Problem. In a letter written to Euler in 1742 Goldbach conjectured that every even number can be represented as a sum of two

primes. The problem remained intractable until 1923 when the Englishmen Hardy and Littlewood, assuming the validity of an unproved conjecture of Riemann, proved that every sufficiently large odd number can be represented as a sum of three odd primes. In 1930 the Russian Schnierelmann proved directly that every integer number can be represented as a sum of no more than 800,000 primes.

This result was characterized by Landau as one of the greatest successes in Number Theory. The number 800,000 was lowered to 2,208 by the Russian Romanoff in 1935, to 71 by the German Heilbronn, Landau and Scherk in 1936, and to 67 by the Italian Ricci in 1937. Returning to the analytic method of Hardy and Littlewood and combining it with a powerful new method of his own Vinogradov, a Russian, proved the above theorem of Hardy and Littlewood, without any further assumptions. The exposition of Vinogradov's method together with applications to other important problems of Number Theory was published in a significant paper in the *Travaux de l'Institut Mathématique Stekloff* of the Russian Academy of Sciences, vol. X, 1937. Vinogradov's work represented a triumph of analytic Number Theory, even more significant than the classical work of Hadamard, Vallée Poussin and Mangoldt concerning the distribution of primes.

Another important progress in additive number theory was due to Rademacher, an American, who gave an expression, in form of a convergent series, for the number of partitions  $p(n)$  of an integer  $n$  into a sum of integers, the two partitions being considered as the same, if they differ only by the order of terms (*Proc. London Math. Soc.*, Ser. 2, 43, pp.241-254).

A notable trend in the recent development of mathematics consisted in a fusion of fields which heretofore appeared as widely separated. Thus the methods of abstract algebra seem to acquire more and more importance in investigations not only in algebra proper, but also in analysis and geometry. The situation is illustrated best of all by the creation of a new system of geometry, which von Neumann, an American, calls continuous geometry. In this geometry the basic elements are not points of the classical geometry, but linear sets.

To each linear set  $L$  of von Neumann's geometry there corresponds a numerical function  $D(L)$  called dimension of the set  $L$ , which coincides with the usual dimension of  $L$  in the case of classical geometry. But in the general continuous geometry  $D(L)$  can assume all values, not necessarily integral, between 0 and a certain constant  $c > 0$ . A series of lectures on this subject was delivered at Pennsylvania State college, Sept. 7-10, and will be published in the *Colloquium Publications* of the American Mathematical Society.

The Theory of Probabilities is a branch of mathematics which has developed particularly rapidly during the recent years. Accounts of this development are given in two books, by Cramér, *Random Variables* and *Probability Distribution*, Cambridge Eng., and by P. Lévy, *Théorie de l'Addition des Variables Aléatoires*, Paris.

Mathematicians are beginning to realize more and more the importance of co-operation and mutual help in their work as is shown by the number of international and national conferences in recent years. Such were the conference on Tensor Differential Geometry (Moscow univ., May 17-23, 1934) of which the report appeared in 1937, the conference on Topology (Moscow univ. Sept. 4-10, 1935), and the conference on the Theory of Probabilities (Univ. of Geneva, Oct. 11-16, 1937). A symposium on the Calculus of Variations (Notre Dame univ., April 7-8) should also be mentioned.

Among popular works appearing in 1937 should be mentioned the excellent essay, *Men of Mathematics*, by Professor E. T. Bell of the California Institute of Technology.

(J. D. T.)



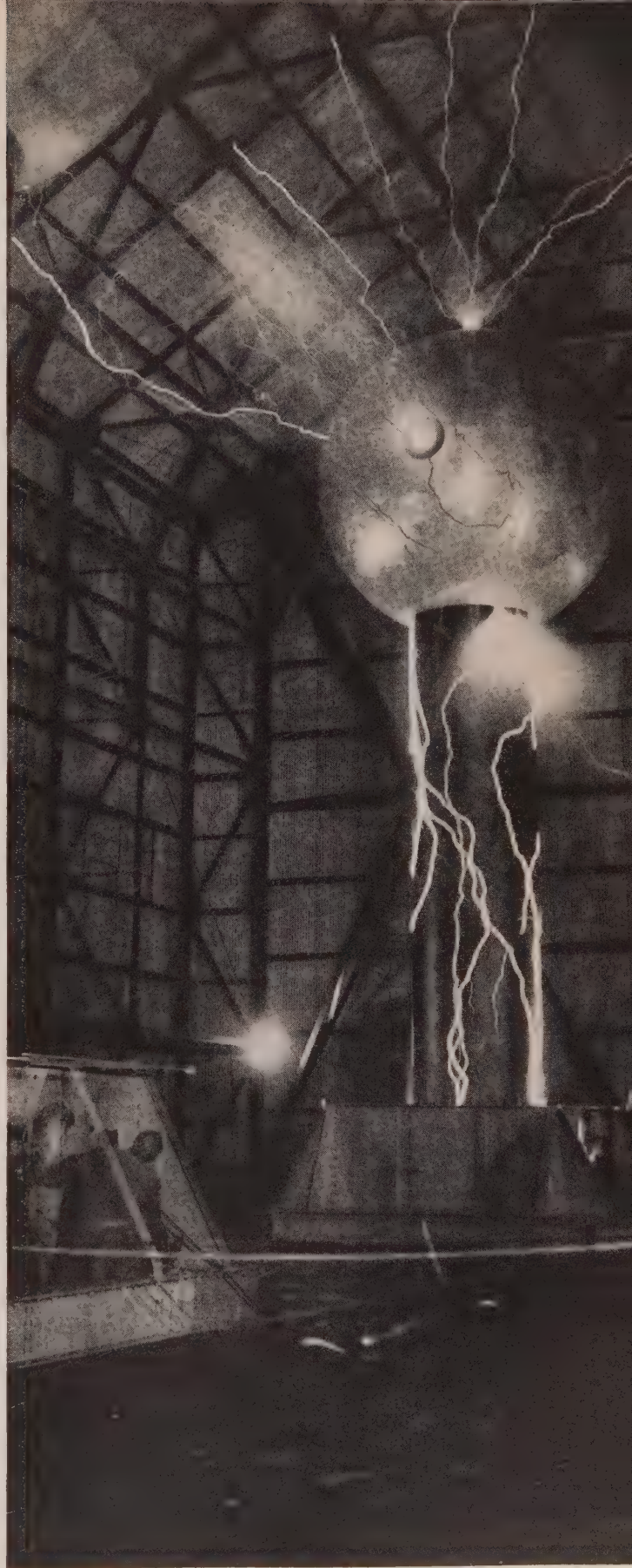
**Matrimonial Causes Act:** see DIVORCE: *Great Britain.*

**Matter, Structure of.** Fundamental for modern views on the structure of matter are the discoveries of the structural units of the atom, the electron, and the atomic nucleus. As is explained in greater detail in the article "Atom" in the *Encyclopædia Britannica*, vol. 2, p. 642, the nuclear model of the atom due to Lord Rutherford allows above all a simple discrimination between such properties of matter, including all ordinary physical and chemical effects, which depend primarily upon the extra-nuclear electron configuration of the atom and those which essentially involve changes of the atomic nuclei themselves, as manifested in the phenomena of natural radioactivity or of artificial nuclear transmutations initiated by impact of material particles or by radiation, the continued study of which has given such remarkable results in the past few years.

As regards the account of the former properties of matter on the basis of the nuclear atom, the incorporation of the quantum of action discovered by Planck into the mechanical treatment of the electron configuration has offered a decisive clue to the understanding of the intrinsic stability of those configurations. In particular, it has led, through the study of optical and high-frequency spectra of the elements, to a classification of the binding of the electrons in the normal state of all atoms by means of so-called quantum numbers, which has given a complete explanation of the relationships between the elements, as expressed in the well known periodic table. The gradual development of proper methods of quantum mechanics, including the general formulation of the exclusion principle for electron systems, has further allowed a complete understanding of the different types of bindings of atoms into molecules, which in the case of the so-called polar bonds are ascribed to the electrostatic forces between ions in their normal state, and in the case of homopolar bonds, are ascribed to the sharing of a pair of electrons of opposite spins in the same quantum state by two atoms.

Great progress has also been achieved in recent years in our understanding of the structure of matter in bulk, especially as regards the crystalline state. Not only has the analysis of the stationary states of crystals led to a comprehension of the optical properties of solids and of the variation of their specific heats at low temperatures, but it has even been possible to derive, on the basis of quantum mechanics, approximate expressions for the cohesive forces between atoms and molecules responsible for the elastic properties of matter in its different states of aggregation. Moreover, a general theory of the typical properties of the metallic state has been obtained by a quantum mechanical treatment of the ensemble of more or less loosely bound electrons in metals. Such a treatment, in which special regard is taken to the exclusion principle, has also given a most instructive explanation of the magnetic properties of metals, including ferromagnetism. Still, certain remarkable properties of electronic or atomic aggregates at very low temperatures, such as the supraconductivity of metals and the suprafluidity of helium which have not yet found any satisfactory explanation, seem to indicate that some essential feature of the lowest quantum states of these aggregates has as yet escaped us.

Apart from the incessant development of the explanation of the properties of matter on the basis of the original discoveries of the structural units of the atom, quite new fields of atomic theory have in recent years been opened by the discovery of further elementary particles which, like the positron and the neutron, only exceptionally appear in ordinary atomic phenomena, but which play a fundamental part in the problem of the constitution of the atomic nuclei themselves. The first isolation in cosmic rays of a positive charged corpuscle of the same mass as the ordinary elec-



**SPLITTING ATOMS** with a 7,000,000-volt discharge from an electrostatic generator under direction of Dr. Robert J. Van de Graaff at Round Hill, Mass.

tron, now often called negatron, was a most striking confirmation of the rational development of the relativistic quantum theory of the electron, which led to the prediction of the possibility



under certain conditions of the materialization of radiation quanta into a positron and a negatron, and of the inverse process of the annihilation of such a pair of oppositely charged electrons with appearance of radiative energy. It is just the last phenomenon which prevents the stable existence of the positron as a constituent of matter, where only ordinary electrons can be held round the positive atomic nuclei. Positrons are liberated, however, as products of artificial radioactive disintegrations as frequently as negatrons, the sign of the charge depending primarily on the ratio between charge and mass of the radioactive nucleus compared with that of stable nuclei. The liberation process itself must indeed in both cases be considered as the very creation of an electron as a mechanical entity, because such light particles cannot be considered as constituents of quantum mechanical systems of dimensions as small as those of atomic nuclei.

The possibility of treating nuclei as quantum mechanical systems entirely composed of heavy particles was opened by the isolation of the neutron through the study of nuclear transmutations by impact of fast material particles. In the development of a comprehensive theory of nuclear constitution based on a model of the nucleus composed of neutrons and protons in numbers indicated directly by its mass and charge we meet, however, with a problem which in some way is the inverse of that of atomic constitution, the characteristic simplicity of which lies in the possibility of identifying the forces between the constituent particles with the ordinary electric attractions and repulsions. In fact, the stability of nuclei claims the existence of forces of a novel type between protons and neutrons, appearing at small distances, and the character of which can only be gradually explored by the study of the nuclear phenomena themselves. Still, without a precise knowledge of the intranuclear forces, a most instructive explanation of the fundamental probability law of radioactive decay under emission of heavy charged particles has been obtained on quantum mechanics which permit the passage of such particles through a region outside the nucleus, where the potential energy corresponding to electrostatic repulsion is higher than the kinetic energy of the released particle, and the penetration of which would thus be impossible on classical mechanical ideas.

A more detailed theory of nuclear phenomena is, however, above all confronted with the difficulty that, owing to the close packing of the nuclear particles, no such approximative procedure as that applied with so great success to the classification of the binding of the individual electrons in the extranuclear configurations of atoms by means of quantum numbers is legitimate. On the contrary, we have in the normal and excited states of nuclei to do with types of motion of an essentially collective character, which must be quantized in a similar way as the states of molecular aggregates, as also appears clearly from the great differences between the distribution of the energy levels of nuclei compared with those of atoms. In particular has the study of nuclear transmutations revealed that the level distribution of a nucleus for high excitation is practically continuous, and that every impact between a fast particle and a nucleus leads, in the first place, to the formation of a semi-stable compound system, the eventual subsequent disintegration of which is to be considered as a separate event, independent of the first stage of the collision process. In this intermediate state the energy is stored in the compound system in a way similar to that of the thermal energy of ordinary bodies, and by introducing, in accordance with this comparison, a suitable definition of the temperature of the highly excited compound nucleus, it has been possible to treat the disintegration phenomena in close analogy to the evaporation processes of liquids and solids.

(See also CHEMISTRY: *Atom-Smasher*; PHYSICS.)

(N. B.)



DR. ROBERT J. VAN DE GRAAFF demonstrates machine for accumulation of 20,000,000 volts of electrical energy

**Mauritania:** see FRENCH WEST AFRICA AND THE SAHARA.

**Mauritius,** a British crown colony consisting of an island in the South Indian ocean, about 1,400 mi. from the coast of East Africa, lying between lat.  $19^{\circ} 50'$  S. and long.  $57^{\circ} 18'$  and  $57^{\circ} 48'$  E., together with a large number of small islands. The governor and commander-in-chief is Sir Bede Clifford, K.C.M.G., who in May 1937 succeeded Sir W. E. F. Jackson, K.C.M.G.; he is assisted by an executive council and a council of government. The capital is Port Louis. Area: 720 sq. mi.; est. pop. (1936) 410,920, including 11,042 in the dependencies. Elementary education is free through Government- and State-aided schools. Advanced education is provided by the Royal college and the Royal college school, managed by the Government. There are 500 mi. of exceptionally good metalled roads, and 110 mi. of Government railways. There are telegraph and telephone services and a private broadcasting station. The chief product is sugar, the 1936 output reaching a record of 300,340 metric tons. Exports in 1935 were valued at Rs. 29,891,160, and imports at Rs. 26,895,460.

The unit of currency is the Mauritius silver rupee (par exchange, Rs. 15 to the pound sterling), which has silver subdivisions. Revenue in 1936 was Rs. 15,350,986, and expenditure Rs. 14,694,644.

**Mayo, Henry Thomas** (1856–1937), American naval officer, admiral, commander-in-chief of the Atlantic Fleet during the World War. He was born in Burlington, Vermont, Dec. 8, 1856, and was graduated from the U. S. Naval Academy in 1876. During his early career he was engaged in scientific work with the Coast and Geodetic Survey and the Naval Observatory. After serving as commandant of the nav-



yard at Mare Island, Calif. (1911-13), he was made commander of the 4th division of the Atlantic Fleet with the rank of Rear Admiral. While stopping at Tampico, Mexico, in April, 1914, he precipitated the Mexican crisis by ordering a salute to the American flag to make amends for the arrest of some American sailors while loading gasoline into a whaleboat. When General Zaragosa refused to comply, the entire Atlantic Fleet was sent to Mexican waters and the city of Vera Cruz was occupied by the United States for several weeks. In 1917 Admiral Mayo represented the United States at the allied naval conference in London and after the World War, in the flagship "Pennsylvania," escorted President Wilson to the Paris Peace Conference. His last posts were commander-in-chief of the United States Fleet (1919) and member of the Navy General Board (1920-21). He died in Portsmouth, N.H., Feb. 23, 1937.

**Measles.** Notwithstanding the many years that have elapsed since measles was first recognized as an infectious disease, distinct from scarlet fever, the exact cause of the condition has not been certainly determined. A step in advance developed during 1937 when Drs. Jean Broadhurst, Margaret Estelle Maclean and Vincent Saurino isolated certain inclusion bodies in the nasal membranes of patients with measles and in the white spots which appear in the mouth in this condition known as Koplik spots. The bodies described were seen on the first day of the disease and seem to be uniformly present from the second day to at least the twelfth day. Similar bodies are not found in people who do not have measles; neither are they found in various other types of infection. The physicians who carried out their work in the Institute of Practical Science Research of the Teachers College of Columbia university in New York city worked out a special staining technic involving the use of a dye called nigrosin. The inclusion bodies could not be found when using ordinary bacterial stains. The nigrosin does not dye the bodies of the bacteria but does indicate the measles inclusion bodies. While it is not certain that these are the cause of the disease, they are apparently specific for their presence in that condition. (M. FL.)

**Meat.** The largest meat-producing countries in the world, New Zealand, Australia and Argentina, are also the largest meat eaters, their total consumption of meat per head being well over 200lbs. The people of Argentina eat most beef, averaging more than 200lbs. per head, but only 13lbs. of mutton and lamb and 35lbs. of pork. New Zealanders consume most mutton and lamb, about 100lbs. per head, 150lbs. of beef per head and 18lbs. of pork. Australians eat 140lbs. of beef per head, 70lbs. of mutton and lamb and 20lbs. of pork. Germany appears to be the largest consumer of pork, with 76lbs. per head of the population, with Canada, United States and Denmark running her close. The meat consumption in Great Britain, the United States and Canada averages about 140lbs., of which pork accounts for about half on average, and beef for most of the remainder in the case of the first two named, while in Great Britain beef represents 65lbs., pork 45lbs. and mutton 30lbs. Less meat generally is consumed in European countries. Germany eats more pork than beef, France more beef than pork, and neither any material amount of mutton, their aggregate consumption of meat being approximately 100 and 90lbs. per head respectively.

International trade in beef and mutton is largely a movement from the northern to the southern hemisphere while world trade in pig meat is mainly confined to the northern hemisphere. Argentina is by far the principal exporter of beef, with Australia supplying second place, although the meat equivalent of the Irish Free State's exports of live cattle would place that country before Australia; then follow New Zealand and Uruguay. The

chief exporter of mutton and lamb is New Zealand, followed by Australia and Argentina. Denmark exports considerably more pig meat than any other country. The British Empire is a net importer of all meats due to the large import demands of the United Kingdom.

The United Kingdom receives by far the largest proportion of world export of beef and is, in fact, the only country with an appreciable demand for chilled beef. The amount of beef imported into the United Kingdom increases each year, and in 1937 was over 10½ million cwts., of which more than three-quarters was frozen. As in the case of beef, the United Kingdom is the chief market for mutton and lamb, taking as much as 95% of the world exports in recent years. Imports into the United Kingdom in 1937 were also heavier than the previous two years, being over 6½ million cwts. Lamb exceeded mutton imports by more than three times.

International trade in pig meat is dominated by the movement of bacon and hams to the United Kingdom. Denmark supplies about half of all the bacon imported into the United Kingdom. In 1937 the United Kingdom imported over a million cwts. of pork and nearly seven million cwts. of bacon. (See also BACON.)

South American countries are the principal exporters of canned meat, the United Kingdom the largest importers, deriving the bulk of its supplies from these countries. The United States is also a large importer of canned meat. (C. A. MOR.)

**Medical Association, American:** see AMERICAN MEDICAL ASSOCIATION.

**Medical Association, British:** see BRITISH MEDICAL ASSOCIATION.

**Medicine.** The outstanding medical advances in 1937 are two related particularly to the treatment of dementia praecox or schizophrenia, and the various uses which have been developed for the drug called sulphanilamide.

For many years scientific medicine has endeavoured to make progress in attacking dementia praecox, a form of insanity affecting youth and leading invariably in the past to progressive degeneration and death. Out of the laboratories now have come two new methods, which are essentially forms of shock treatment, for this condition. One involves the injection of the drug called insulin to the point at which the patient loses consciousness or may develop convulsions due to a lessened amount of sugar in the blood. The other involves the injection of a drug called metrazol which produces convulsions like those of epilepsy.

Now that these methods have been tried on a great number of cases of this disease, reports are beginning to appear of numerous patients who have developed normal mental states and have been able to go back to their families and to their homes, and some of them into useful occupations. In some of the cases, however, there have been remissions and relapses so that return to the institution and renewed treatment have become necessary. In other cases there have been complete failures. It would seem, however, that early use of the treatment, and particularly when combined with the modern methods used in sanatoriums, including physical, laboratory, and scientific therapy, may bring about actual cures in many cases. Here is a new ray of hope in a condition where formerly all was darkness.

In addition to these discoveries in the field of nervous and mental diseases, attention should be called also to the development of the new method of study known as electroencephalography—a method of registering on a visible screen the actual activity going on within the brain. This method yields the possibility of great help in the diagnosis of various forms of diseases affecting the brain. It is particularly important to realize that



scientific measurements mean actual science in contrast to the guesswork on which previous procedures may have been based.

The third field of interest in nervous and mental diseases is the use of surgery in the treatment of certain forms of psychoses or mental conditions. Operations have been developed in Washington, D.C., and in Montreal which involve crushing of portions of the brain and removing portions of the brain. All of this work, however, is in much too early a stage to indicate any established usefulness.

**Sulphanilamide.**—In 1935, the investigator Domagk announced the development of a dark red dye substance which is the hydrochloride of 4'-sulphamido-2:4-diaminoazobenzene. This drug was known by various names, among them "prontosil." From this there came the further development of prontosil which is paraamino-benzenesulphonamide which is a white powder and not a dye. This is known as sulphanilamide. Now that these two drugs have had extensive use in various parts of the world, much credit is given to them for the control of diseases formerly uncontrollable. For instance, the drugs are specific apparently against certain forms of streptococcus known as beta haemolytic streptococcus. Formerly, meningitis caused by these germs was invariably fatal. Already innumerable cases have been reported of recovery from such meningitis following the use of sulphanilamide.

The drug has also been found of value in the treatment of type three pneumonia; in the specific treatment of gonorrhoeal infection of the eyes, particularly ophthalmia neonatorum, the infection of the eyes of the infant at birth; in other forms of meningitis than those due to the streptococcus; in certain cases of infection at childbirth; and finally in the treatment of infections of the mastoid bone, so that cases are reported of recovery in this condition without surgical operation.

So intense was the interest during the year 1937 in the new developments associated with this drug that one of the major disasters in medical practice in the United States resulted from this intensity of interest. The drug is available chiefly in the form of tablets, and in special solutions developed for injection. Because of its usefulness, attempts were made to develop solutions which could be taken by mouth, but the drug may be unstable in chemical combinations, and thus far no stable solution has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. It occurred, however, to a manufacturer to dissolve the sulphanilamide in a solvent known as diethylene glycol. This solvent is well established for various industrial purposes, but has never been considered suitable for internal use; in fact, the Food and Drugs Administration of the Department of Agriculture had ruled that it be not used in food substances. The manufacturer distributed well over 700 packages of the preparation, either as samples directly to physicians, or else to individual drug stores or wholesale drug houses. Shortly thereafter reports began to appear of sudden death following the taking of this elixir of sulphanilamide, in practically every instance death resulting from uraemia as a result of the effects of the diethylene glycol on the kidneys of those who had taken the preparation. Acting as a hygroscopic agent, the diethylene glycol completely blocked the flow of fluid through the kidneys, with death from uraemia as the inevitable result. Seventy-three deaths were established as resulting from the taking of this mixture and there may possibly be 20 others. By prompt action, the Food and Drugs Administration recovered every package of the material, and a special message has been sent to Congress urging amendments to the food and drugs legislation which will prevent such an occurrence in the future.

**Vitamin Research.**—Among the greatest of all the interests that have developed in recent years is the new attention paid to

the vitamins. The Nobel prize in medicine for 1937 was awarded A. von S. Gjörge for his investigation related to the isolation and synthesis of vitamin C. In connection with the vitamins there was announced during 1937 the synthesis of vitamin B<sub>1</sub>, the isolation of a new anti-haemorrhagic vitamin, the development of new standards for vitamin D milk, the development of crystalline vitamin A, and the identification of nicotinic acid as possibly identical with one of the fractions of vitamin B. All of these discoveries are of immense importance in relationship to the vitamins in controlling various forms of disease.

Moreover, in connection with the use of vitamin A, a device has been developed known as the biophotometer, by which it is possible to determine through examination of the eye whether or not a person suffers from a vitamin A deficiency. One of the early symptoms of vitamin A deficiency is the development of night blindness. It is possible that some of the motor accidents occurring particularly at night may be the result of a deficiency of this vitamin in the diet.

**New Materials and Apparatus.**—Among the new drugs which have been accepted during 1937 as having special value in various diseases, attention must be given to protamine zinc insulin which, when injected, has a longer and more gradual effect. By the use of this preparation, a person who has been taking three injections of insulin daily may be able to get along with two a person who has taken two injections may be able to get along with one. Mandelic acid has been found of special value in the treatment of infection of the kidney and of the urinary tract.

Among new anaesthetics, particular attention must be given to two new products known as vinathene and pantocain. The search for new anaesthetic substances continues with a view to finding something less toxic than those already in use and which may be easier to administer. Indeed, the development of new methods of anaesthesia represents one of the greatest contributions of medical science in the current century.

In the condition called myasthenia gravis, which is a disease affecting the nervous system, the muscles gradually waste away and lose their strength. In this condition, the product called prostigmin has been found to be of special value.

Interest attaches also to the product called benzedrine sulphate now frequently inhaled during a common cold in order to relieve congestion in the nose. Taken internally, this drug has been useful in raising the blood pressure, but also particularly in stimulating the brain. For a while there developed a craze for its use among university students who took the drug in order to think better and keep more wide awake during examinations. Since it was shown, however, that the stimulating effect of the drug on the heart and the blood pressure may be serious in certain cases, students everywhere have been warned against the routine use of such preparations.

In the field of physical devices some exceedingly interesting developments have occurred, particularly in the improvement of artificial apparatus to aid the hearing; in the development of new types of tents to be used by patients undergoing treatment with oxygen for pneumonia and similar conditions, and the new type of respirator for maintaining the breathing particularly in cases of paralysis of the nerves and muscles involved in breathing which occurs in infantile paralysis. The new type of respirator or iron lung represents an improvement because it covers only the upper half of the body and does not involve the insertion of the complete person into the apparatus.

Other forms of apparatus include a new type of machine for causing alternating filling and emptying of the blood vessels, a useful method of treatment in such conditions as Buerger's disease, Raynaud's disease, and others affecting the circulation of the blood in the legs.



Apparatus has been developed for the use of short-wave radiations in raising the temperature of the body. Improvements have been made in various types of cabinets for administering heat in the treatment of such conditions as syphilis, arthritis, gonorrhoeal infections, and other conditions in which heat has been shown to be of value.

Since it has been established that many people are particularly sensitive to dust, feathers and dandruff, new types of mattresses and pillows have been developed encased in materials which prevent the inhalation of dust or of dandruff.

**Sensitivity.**—More and more attention is being given to all forms of sensitivity of human beings to various substances. Today basic studies are made on the chemistry of the body and its functions in relationship to sensitization. It has been found that there may be sensitivity to chemical substances, that the patient who is sensitive has a normal tolerance for sugar, that probably the amount of calcium and potassium circulated in the blood is not of particular importance in relationship to sensitivity. It has been found that sensitivity to certain foods may produce a fever in the human body, that there are important changes in the blood in connection with some forms of sensitivity, and that people who are sensitive to some foods may develop excessive bleeding. Finally attempts have been made to develop extracts and concentrates of the pollens and other protein substances, with the idea that these substances taken internally might develop desensitization. An extensive study of these methods has not proved that this is a helpful procedure.

**Surgery.**—In the field of surgery, attention has centred largely on the possibility of performing various surgical operations on the heart so as to increase the blood supply to the tissues of the heart after various types of disturbances, and also on operations which are performed on the nervous system with a view to benefiting high blood pressure and other conditions related to disturbances of the so-called sympathetic nervous system.

**Vaccination.**—Since the attack on the infectious diseases continues to be one of the chief problems of medical science, special attention must be paid to the new experiments in relationship to infantile paralysis which have demonstrated that in the vast majority of cases the infection enters the human body by way of the nose, and that it may be possible, through the use of various solutions, to obstruct the entrance by way of the olfactory nerves in the upper part of the nose. It is possible that the specific virus causing measles may have been isolated. Apparently rabies or hydrophobia tends to develop rapidly whenever preventive medicine relaxes its vigilance, and the increase in rabies in the southern portion of the United States has been pointed out as a prominent problem.

In the treatment of pneumonia, new serums have been developed for types of pneumonia 5, 7, 8 and 14 that seem to be as good as the pneumonia serum for pneumonia types 1 and 2. Experiments, using the blood of rabbits, have shown that serums may be developed from the rabbit for pneumonia types 1, 2, 7 and 8, with the possibility that the unconcentrated rabbit serum is more useful than the old concentrated horse serum. Moreover, in the treatment of pneumonia there has been the development of a compound of quinine which seems to have specific action on the germ of pneumonia, and at the same time to be free from harm to the nerves.

In the prevention and treatment of whooping cough there has been taken place further refinement in the vaccines used for this purpose. In Denmark particularly most encouraging reports have been forthcoming. In Denmark also experiments have been done with toxoid against diphtheria which has been used intravenously, and also the application of solutions on the mucous membrane of the nose. These constitute routes that are alternatives to the

injection under the skin of this preventive preparation.

Extensive experimentation has been made during the year on the possible use of injection of various vaccines at the same time with the possibility that the child may be immunized by one injection or one series of injections against several different diseases.

**Public Health Work.**—Outstanding among the campaigns in the field of preventive medicine during the year was the enlightenment of the public on syphilis and gonorrhoea. These venereal diseases, formerly shrouded in mystery because of public modesty, now are attacked through public campaigns in the press, before forums, and over the radio. The new attack on syphilis is supported by the appropriation of millions of dollars in the campaign, and by the application of new methods of diagnosis and treatment, which indicate that with proper education of the public and of the medical profession, the application of the new methods may bring about a tremendous lowering of the incidence of these diseases. Especially to be mentioned are fever treatment in many forms of gonorrhoea, the use of sulphanilamide for gonorrhoeal infections of the eyes of children, and improved methods in the use of bismuth and arsenic. During the year, three States adopted a law making it compulsory to have a test of the blood for the presence of syphilis before issuing a marriage licence.

Increased attention by the medical profession to deaths from motor car accidents is bound to bring about a favourable effect on this problem. The fact that almost 40,000 people are killed each year in the United States, more than 100,000 seriously injured, and a million other people injured in moderate degree is an indication of the importance of this problem. Whereas motor car accidents did not appear on the list of causes of death 30 years ago, it is today somewhere between seventh and tenth in importance.

Problems of health, important from the public health point of view, which have had special attention during the year include new studies and new apparatus for air conditioning; demands for new legislation controlling the purity and safety of foods, drugs and cosmetics; investigations as to the health hazards involved in contamination of fruits and vegetables by the method of spraying to prevent parasitic infestation.

The increasing importance of industrial medicine caused the American Medical Association to establish a special Committee on Industrial Medicine which is to concern itself with these problems. (See also BIOCHEMISTRY: *Medicine*; INFANTILE PARALYSIS; SURGERY; VITAMINS.)

(M. FL.)

**Mediterranean, The.** During the year 1937 the Mediterranean has been the scene of important events and developments. The Civil War in Spain, the limitation of which to the peninsula became of such importance to European peace, gave birth to an experiment in isolation. A "pacific blockade," though warmly espoused by some persons in Great Britain, was clearly seen to be both impossible and useless. In place, an arrangement for observation of the Spanish coasts and land frontiers was established. Supervisors were to be embarked on board ships bound for Spanish ports, whose duty it was to superintend the unloading of ships in those ports and ensure that they carried neither arms, munitions, nor volunteers. At sea, the Navies of the United Kingdom, France, Germany, and Italy were to patrol in certain zones off the coast and report, to the International Committee for Non-intervention, the arrival within their zones of ships which had either not been under supervision or which refused to submit to examination.

The Spanish Mediterranean coast was divided for this purpose into zones. The coasts of Spanish Morocco, Majorca, and Iviça were allotted to France; from Gibraltar to Cape Gata to Great Britain; from Cape Gata to Cape Oropesa to Germany; from



Cape Oropesa to the Pyrenees frontier and the island of Minorca to Italy. Thus, the distribution was so made that the Powers whose duty it was to prevent supplies and volunteers from reaching the coast were those whose political sympathies might be expected to make them vigilant in excluding shipping.

The arrangement was put into force, but not for long. In consequence of a submarine attack reported to have been made upon the German cruiser "Leipzig" when cruising at sea, and of the bombing of a German armoured cruiser in harbour, Germany withdrew from the observation scheme. Her place was taken by the British and French Navies.

As the civil war continued, attacks were made upon the shipping of the neutral nations, indiscriminately, by flotilla craft, submarines, and aircraft whose nationality was not known. Ships were fired upon, torpedoed, or bombed. To bring this to an end, an arrangement was made, by an international committee sitting at Nyon, to patrol the sea routes, Great Britain, France, and Italy being allocated zones in the routes. After some difficulties, arising out of Italy's representation that too small an area had been placed in her control, the scheme was put into operation and met with success, the "piratical" attacks ceasing almost entirely. Later, the scheme of coastal supervision came to an end.

In the Balearic Islands, Minorca, with its small but excellent harbour Port Mahon, has remained in the hands of the Spanish Government. Majorca, which was occupied and brought under the control of the insurgents by Italian forces immediately on the outbreak of the civil war, has been kept in Italian hands. Although strong assurances have been expressed by General Franco that he will allow no portion of Spanish territory whatever to pass out of Spanish possession, there has been an unavoidable anxiety both in Britain and France lest circumstances may prove too strong for him. Majorca, situated as it is, closely flanking the lengthwise traffic of the Mediterranean, is of particular importance to Great Britain, while the crosswise traffic between France and her North African Empire, forming an essential link in the French military communications, is of no less importance to France. The occupation, therefore, of that island by a powerful naval and military Power could never be a matter of indifference to either of those Powers.

A new Italian base has been in the course of development in the island of Pantellaria. Lying as this island does in almost the narrowest part of the sea between Sicily and Tunis, its development as a naval and air base introduces a new element into Mediterranean strategy.

How far the increasing power of aircraft will affect either the command of the sea, or the continuance of traffic by sea in those

regions within the range of aircraft has been a matter of speculation for some years. According to the views of one school of thought, aircraft will render it impossible for ships of war to operate at sea, for merchant shipping to traverse sea routes, or for ships to lie in harbours within the reach of aircraft. The experience of the year 1937 in the Mediterranean has not confirmed these expectations. Ships of war and merchant ships have not been prevented from moving along all parts of the Spanish coasts, or from lying in Spanish harbours. The experience is for many reasons, of too limited a nature to enable definite conclusions to be drawn, but, such as it is, combined with the experience of the Yangtze in the Sino-Japanese war, it does not lead to the conclusion that either the bases of the British fleet in the Mediterranean would be rendered untenable in war by aircraft or that ships of war would be unable to move or to afford protection to shipping at sea. The fact that Pantellaria, lying within a short distance from the mainland of a foreign State, is being developed as a base, appears to indicate that Italian technical opinion does not share in the belief in the untenability of a position so situated.

In the eastern basin of the Mediterranean the serious disturbances, calling for the use of a comparatively large body of troops, have continued in Palestine, unbroken by the proposals of the Peel Commission.

Arab hostility to the Mandate has shown itself as fixed as it has been from the beginning. The position in the Mediterranean is affected by the repercussions of this unrest. If Great Britain should find herself involved in war, the situation in the Mediterranean would be affected if the oil supplies of the forces operating in the Mediterranean were threatened on land. The pipeline from Mosul, which brings the oil to the coast at Haifa, would be exposed to injury from a hostile population. The quantity—some 5.1% of the British imports of oil—may not seem considerable, but it is by no means negligible; and still less negligible would the strategical disadvantage be of being unable to supply the fleet in those waters from so convenient a source of supply.

Hence, as has happened in analogous situations in the past, it might prove necessary to despatch military forces to guard the land line of this supply; and, as much experience has shown, it is not possible to predict the limits to which such action might extend.

The other disturbing feature in the eastern Mediterranean has been the constant stream of anti-British propaganda which has

DELEGATES from nine nations meet at Nyon, Switzerland, to establish naval patrol against "pirate" submarines, aeroplanes and warships in the Mediterranean.





been poured from the wireless station at Bari into the Near and Middle East. Reference has been made to this in the British Parliament, and representations made to Italy. Recent Italian writings have displayed a tendency to represent Great Britain, both in the past and present, as the obstacle to Italian expansion and the creation of a *mare nostrum*.

The possibility that it might prove necessary, or desirable, to divert in war some of the British trade which now originates in, or passes through, the Mediterranean, has been a question that has attracted increasing attention in British circles. The British imports on the Mediterranean route amount to a little less than one-fifth of the whole British import trade; and of that, somewhat less than a half comes from east of Suez, somewhat more than a half comes from countries bordering the Mediterranean and the Red sea. Diversion of some of this round the Cape of Good Hope has many obvious economic disadvantages: longer voyages; great consumption of fuel by fuel carriers; heavier demands upon mercantile tonnage which, as the last war showed, must be used to its utmost effective power; loss of the freights and the trade normally conducted with intermediate ports; and the effects of all of these upon competition, always acute, in sea carriage—these cannot fail to be serious.

Against these disadvantages must be weighed the strategical disadvantages of affording protection. The possibility that diversion might in certain circumstances be needed is reflected in the extensive development which is now in progress at the harbour of Table bay.

A joint declaration on Jan. 2, 1937 was made by the British and Italian Governments, which recognized that "freedom of entry into, exit from, and transit through the Mediterranean is of vital interest both to the different parts of the British Empire and to Italy," and disclaimed any desire to modify the *status quo* in the Mediterranean; and each undertook to respect the other's rights and interests in that area. In answer to a specific question asked by the British Ambassador on Dec. 31, 1936, as to whether Italy intended that "the integrity of the present territories of Spain shall in all circumstances remain intact and unmodified," Count Ciano replied that such was Italy's intention. (See also INTERNATIONAL LAW: *Civil War*; ITALY: *History*; NON-INTERVENTION COMMITTEE; SPAIN: *Civil War In*.)

**BIBLIOGRAPHY.**—For some recent surveys of the historical and modern importance of the Mediterranean, and of policy relating thereto, see Slocombe, *The Dangerous Sea*; Petrie, *Lords of the Mediterranean*; Zanuttelli, *Il Mediterraneo e la Civiltà Mondiale*; Squadrilli, *Politica Marinara e Impero Fascista*. For views on the attacks on Mediterranean trade: McNair, "The Law relating to the Civil War in Spain" *Law Quarterly Review*, 1937, pp. 471 *et seq.*; Jessup, "The Spanish Rebellion and International Law" (*Foreign Affairs*, Jan. 1937, p. 384). For the Anglo-Italian Declarations: *Cmd.* 5348 and 5429.

(H. W. R.).

**Mellon, Andrew William** (1855–1937), American statesman and financier, for a time referred to as "the greatest secretary of the treasury since Alexander Hamilton" and one of the world's wealthiest men. Born, March 24, 1855, he inherited a million dollars which grew several hundred times during his lifetime. This was made possible by the establishment of control over aluminium production, by real estate investments in Pittsburgh, and by participation in the affairs of over sixty corporations. At 66, he resigned all financial connections to become Secretary of the Treasury under Presidents Harding, Coolidge and Hoover. His administration was marked by debt and tax reduction made possible by a period of unprecedented prosperity. Following international financial negotiations in 1931, he was appointed ambassador to England. He resigned this post on his seventy-ninth birthday (1934). Soon after his return to the United States, he was unsuccessfully prosecuted by

the Federal Government for tax evasion and a few months before his death steps were taken to dissolve his \$174,000,000 aluminium company as a monopoly. His philanthropies, including large contributions to the Carnegie Library of Pittsburgh, the Carnegie Institute of Technology and the Mellon Institute of Industrial Research, were climaxed by provision for erection of a National Gallery of Art at Washington and the gift of his collection of paintings, valued at over \$19,000,000, as a nucleus. The will covering the large estate remaining in his hands upon his death at Southampton, L.I., Aug. 26, 1937, provided for the establishment of educational and charitable trust funds. Further information regarding his career may be found in the *Encyclopædia Britannica*, vol. 15, p. 226.

**Mellon Art Gallery (National Gallery of Art):** see ART EXHIBITIONS.

**Memel Territory**, a long strip of land along the right bank of the river Niemen on the frontier of East Prussia, comprises 976 sq.mi., and a population of about 150,000. According to the German census of 1910 this region had a population of 140,766, of whom 71,191 spoke German as their mother-tongue, 67,345 Lithuanian, and 1,970 were bi-lingual. The Germans greatly predominated in the town and port of Memel, the Lithuanians in the rural districts. By the Versailles Treaty Germany was compelled to cede the Memel Territory to the four principal Allied Powers. While they were delaying as to its final disposition, the armed forces of Lithuania suddenly burst in and occupied it in January, 1923. The Powers accepted the situation but tried to regularize it by the Convention and Statute of May, 1924. Memel Territory was to be part of Lithuania but was promised large autonomy. Its Government was placed in the hands of a governor appointed by Lithuania; an elected chamber of representatives (*Landtag*); and a directorate of five; the president of the directorate is appointed by the governor, but he himself appoints the other four directors.

Unfortunately racial hatred between Memellanders and Lithuanians prevented the smooth working of the Government. The first Landtag, elected in Oct. 1925, was composed of 27 Germans and 2 Lithuanians—a striking indication of the German sympathies of the Memellanders, even of those whose mother-tongue is Lithuanian. Lithuania, irritated by this, used all sorts of coercion to restrict the enjoyment of the promised autonomy and to lessen German influence. In 1934, 538 German employees were dismissed and 126 Germans were accused of treason before a Lithuanian military tribunal. Before the election of Sept. 1935, German newspapers were illegally suppressed, four candidates were deprived of citizenship to prevent their election, and some 9,000 Lithuanians were given the vote.

By an expropriation law of Sept. 6, 1937, Lithuanian authorities began to seize German land for barracks and other public buildings without consulting the local authorities and without assuring adequate compensation. President Baldiszus protested in the Landtag that this was contrary to the terms of the Memel Statute of 1924 and his protest was adopted by an overwhelming majority. See Art MEMEL in *Encyclopædia Britannica*; and Ian F. D. Morrow, *The Peace Settlement in the Polish-German Borderlands* (Oxford Univ. Press, 1936).

(S. B. F.).

**Mercury.** World production of mercury declined from 5,600 metric tons in 1929 to a low of 2,040 tons in 1933, and recovered to about 3,900 tons in 1936. The leading producers are Italy, Spain and the United States; over the past 25 years, the distribution of the output has been one-third each from Italy and Spain (with Italy slightly in the lead), and one-sixth



from the United States, the remainder being divided among a large number of minor producers, the chief of which are Mexico and the Soviet Union. The present distribution is not greatly different from this, except that Italy has taken a somewhat greater lead over Spain. In the extreme, Italian production has fluctuated between 52% and 17% of the total, Spanish between 48% and 17%, and the United States between 30% and 7%. Austria was formerly a producer on about the same scale as the United States, but in the readjustment of territory after the World War lost the producing district to Italy; without this addition to production capacity, Italy would rank below Spain, instead of above.

Italian production was 2,000 metric tons in 1929, 440 tons in 1934, and 1,470 tons in 1936; 1937 brought another sharp increase, and the output for the first seven months of the year was reported greater than the total for 1936. Spanish production dropped from 2,500 tons in 1929 to 660 tons in 1930, and recovered to 1,200 tons in 1935; due to the civil war, nothing has been reported for 1936 beyond the bare statement that production increased over 1935. Sixty years ago the United States supplied two-thirds of the world total, but the highest figure in recent years was 860 tons in 1931, dropping to 330 tons in 1933, and increasing to 600 tons in 1935; 1936 declined again, to 570 tons.

Recent increases in output have been due not only to general industrial improvement, but also to rearmament demands.

(G. A. Ro.)

**Metallurgy.** There was nothing spectacular in metallurgical advances in 1937, but the fluctuations in the prices of non-ferrous metals left company executives giddy. Electrolytic copper opened in London at £54½ per ton, advanced to a high of £79 per ton in March, and closed at £43¼. Lead opened at £26⅞ per ton, attained a high in March of £36, fell to £15½. Standard spot tin opened at £228⅜ per ton; advanced to £301 in March, and closed at £181¼. Zinc opened at £18⅞ in London, rose to £36¼ in March, and closed at £15½. American prices paralleled this record of extraordinary instability.

A short résumé of technical developments follows:

**Copper.**—Advances during the year were largely confined to fabrication, such as improvement in the extrusion of such alloys as cupronickel, aluminium bronze and aluminium brass and to the bright annealing of copper and all copper alloys.

**Gold.**—The continued high price of gold resulted in great activity but no great changes in metallurgy. Dredges were increasingly complex; what used to be very simple affairs becoming highly developed floating metallurgical plants. At Wiluna Gold Mines, Ltd., in Australia, novel metallurgy was introduced into the treatment of an antimony-gold ore, formerly treated by cyanidation. (See also GOLD.)

**Iron and Steel.**—The year 1937 was marked by much attention to the quality of pig iron, both as produced by the blast furnace

and as remelted in the cupola. German metallurgists did much in the way of developing chrome-molybdenum steels carrying 0.2 to 1.2% molybdenum that were decidedly cheaper and probably stronger than much more expensive chrome-nickel steels. A drawback of the new steels was a very narrow limit in the proper heat-treatment range, but labour for close attention to this point was cheaper than nickel. The Germans also extended their previous work on manganese as a substitute for nickel in certain austenitic steels. Casehardening by the zirconium group appears to have made substantial progress during the year. The production of aluminium-coated steel reached large scale commercial production both for wire and plate.

**Lead.**—There were no marked changes in lead-smelting practice during 1937. At the Trail, British Columbia, blast furnaces, a large number of small tuyeres were substituted for a small number of large tuyeres, apparently with good effect. The continuous desilverizing process introduced at Port Pirie, Australia, was reported as a complete economic success; but was not adopted elsewhere. The first published descriptions of the Northfleet, Kent, lead refinery appeared in 1937. This is one of the world's large refineries and is supposed to embody the best modern practice. It operates on bullion from Mount Isa, Queensland, and produces lead, silver, arsenic, antimony and copper. The process is a Betterton modification of the Parkes process. The world's tallest stack, 605½ ft., was completed at the Selby, Calif., smelter of the American Smelting & Refining Co.

A new important low-cost lead-zinc producer came into production in Yugoslavia, when Kopaonik Mines, Ltd., began shipments to the Trepca concentrator.

**Tin.**—The International Cartel continued in full control of tin production throughout most of the world. The high price of tin greatly stimulated research both for tin substitutes and in the use of electrolytic tin coatings requiring a smaller amount of tin to replace the hot-dip plate now used.

**Zinc.**—The introduction of vertical retorts into Germany was probably the outstanding development of 1937. Eight retorts were completed at Oker to treat the Rammelsburg complex ore, with a rated capacity of 10,000 metric tons per year, and another unit was under construction. Electrolytic zinc capacity increased greatly. The Sullivan Mining Co. of Kellogg, Idaho; the Hudson Bay Mining & Smelting Co., Flin Flon, British Columbia; and the Government subsidized plant at Magdeburg, Germany, all increased their capacity. The U.S.S.R. projected a new plant for the Altai district. Republic Steel Co. has begun electrogalvanizing operations on a large scale near Chicago, Ill. The production of zinc-coated strip in coils with a heavy plating sufficiently ductile to withstand fabricating operations was announced as a commercial success.

**Miscellaneous.**—Showing the use of fundamental investigations, the application of what was originally a purely scientific idea, that of the "Beilby layer" (an amorphous film on the surface of metals) and a comparatively new research technique, that of electron diffraction, have resulted in a practical result of interest to all automotive engineers and in fact to all users of motor cars. An aluminium piston anodically oxidized has a surface layer of aluminium oxide. In "running in" the piston, this aluminium oxide is converted into crystals that score the cylinder walls.

Table 1—Monthly Rainfall, in Inches, 1937, in Cities of the United States

Stations	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Albuquerque, N. M.	0.21	0.11	0.63	0.42	2.78	1.91	1.02	0.22	0.87	0.79	0.01	0.48	9.45
Bismarck, N. D.	0.70	0.39	0.58	1.43	1.52	6.09	2.17	1.12	1.19	0.49	0.41	0.51	16.60
Buffalo, N. Y.	4.42	2.12	1.81	4.58	3.02	5.94	3.00	2.08	1.09	3.55	2.34	3.78	37.73
Charleston, S. C.	3.91	4.68	1.84	6.55	1.60	3.11	9.62	4.99	4.34	2.68	4.86	1.48	48.76
Chicago, Ill.	2.29	0.63	1.20	4.01	1.64	5.02	1.41	2.68	1.89	3.09	1.25	1.27	26.98
Del Rio, Tex.	0.21	0.18	0.92	0.18	0.26	0.44	0.88	0.03	0.41	1.49	1.84	3.93	10.77
Helena, Mont.	0.84	0.18	0.98	0.57	0.29	2.27	1.38	0.65	2.25	0.38	0.31	1.50	11.60
Houston, Texas	3.25	0.45	3.89	0.33	T.	3.12	2.94	4.18	4.69	6.82	1.37	7.14	38.18
Knoxville, Tenn.	11.63	4.51	1.61	3.04	4.38	2.52	6.33	5.70	2.11	4.08	1.06	3.29	50.26
Los Angeles, Calif.	1.99	7.87	4.04	0.24	0.28	0.00	0.00	0.00	0.00	0.01	0.00	3.59	17.97
Memphis, Tenn.	17.50	1.95	1.96	3.59	4.04	4.07	4.32	1.72	2.50	5.49	4.18	3.92	55.30
Miami, Fla.	1.30	4.02	7.06	1.60	2.45	3.83	5.70	8.82	16.99	5.00	0.33	0.40	57.50
Mobile, Ala.	4.93	3.29	0.66	7.49	4.62	7.21	7.27	4.45	3.16	11.43	2.23	3.28	65.42
New York, N. Y.	6.01	1.87	2.68	5.00	2.64	3.07	4.41	7.92	4.04	4.12	4.12	1.95	48.13
Norfolk, Va.	8.40	2.53	3.08	1.44	3.35	7.49	5.69	6.77	4.47	3.98	5.57	1.87	59.70
North Platte, Neb.	0.62	0.30	1.09	0.09	0.64	3.15	2.21	0.76	0.89	1.27	0.06	0.20	12.37
Oklahoma City, Okla.	1.21	0.12	1.15	2.66	1.82	4.05	0.74	2.44	2.90	2.25	2.47	1.12	23.53
Portland, Me.	4.04	3.17	5.68	5.75	5.58	3.05	0.95	0.95	3.99	5.16	5.77	4.18	49.77
Portland, Ore.	6.02	6.34	2.81	6.22	1.06	3.88	0.20	1.41	2.62	2.91	10.08	13.86	56.85
San Francisco, Calif.	5.26	4.88	7.05	0.86	0.06	0.59	T.	T.	T.	0.90	2.46	3.73	25.79
Sault Ste Marie, Mich.	3.61	2.54	0.24	2.32	1.61	1.15	4.22	1.08	5.24	3.33	2.96	2.41	30.71



Table II—Monthly Rainfall, in Inches, for 1937, Outside the United States

Stations	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
London	3.8	4.1	2.8	2.0	2.2	1.8	0.9	3.0	2.0	2.4	1.4	3.8
Edinburgh	2.0	3.0	1.7	1.1	2.5	1.0	5.4	4.1	1.6	0.2	0.6	2.8
Paris	3.8	3.6	3.1	2.6	3.2	1.3	1.3	0.4	3.5	2.4	0.9	2.6
Berlin	1.0	2.5	2.6	2.3	2.0	1.8	3.0	3.8	1.5	0.9	1.3	1.1
Stockholm	1.6	2.5	2.2	1.1	0.6	0.8	3.7	2.5	4.0	0.4	3.8	2.3
Oslo	2.0	1.7	2.1	2.4	2.8	3.1	1.4	1.2	4.8	1.3	0.1	0.3
Copenhagen	1.0	1.9	3.2	1.3	3.4	1.6	2.0	0.8	2.0	0.6	1.9	2.2
Utrecht	3.8	4.2	3.1	2.4	2.2	2.3	1.9	2.6	3.5	0.6	1.5	2.0
Vienna	1.1	1.7	4.2	2.5	0.5	3.1	4.2	4.6	5.2	1.2	2.0	2.4
Lisbon	7.5	1.8	0.6	1.3	1.0	0.4	0.0	0.0	0.8	6.0	7.3	3.3
Rome	0.8	..	2.8	1.6	2.4	..	0.0	0.8	..	5.2	2.8	5.2
Leningrad	0.4	1.6	2.4	0.4	2.0	0.8	4.4	2.0	2.4	0.4	2.0	2.0
Moscow	0.8	3.2	3.2	0.8	2.0	2.4	4.8	2.0	1.6	2.0	2.0	2.4
Calcutta	0.0	5.4	0.4	0.2	5.5	17.5	10.9	14.1	13.3	7.9	..	..
Bombay	0.0	0.6	0.0	0.0	0.0	18.3	30.4	5.5	14.2	1.6	..	..
Baghdad	..	..	..	0.7	0.2	0.0	0.0	0.0	0.0	0.5	1.1	0.0
Rangoon	0.0	0.5	0.0	4.0	0.6	20.1	28.0	16.2	19.1	10.8	..	..
Singapore	1.2	7.5	6.0	10.7	12.8	4.9	2.9	4.6	8.0	3.5	9.0	10.4
Capetown	1.2	0.3	1.0	2.2	3.4	8.1	5.9	1.4	1.7	1.1	1.0	0.0
Johannesburg	8.5	5.9	2.6	1.8	0.3	0.0	0.1	0.0	1.1	1.4	2.4	8.5
Salisbury (Rhodesia)	4.7	8.1	2.5	1.0	0.0	0.0	0.0	0.0	0.0	0.1	..	..
Quebec	3.8	2.4	2.1	2.0	4.5	4.8	4.4	9.6	5.8	7.5	4.3	..
Toronto	5.2	2.2	1.5	4.0	2.9	3.6	2.9	2.9	1.4	2.8	2.0	1.6
Winnipeg	1.0	1.2	0.3	2.6	2.2	2.2	2.8	2.1	2.3	0.7	0.9	1.6
Victoria, B. C.	2.3	5.2	1.4	2.3	0.4	2.2	0.0	1.6	0.4	3.2	6.4	3.2
Sydney	2.1	1.3	9.1	5.6	0.8	15.8	3.3	4.2	0.5	3.3	3.7	..
Melbourne	2.5	1.6	1.2	1.4	1.3	1.3	1.2	1.3	1.7	6.1	0.4	..
Perth	0.0	0.4	0.2	4.1	7.3	9.0	2.5	6.8	2.7	1.5	0.7	..
Wellington, N. Z.	3.1	4.2	2.2	2.3	3.4	3.3	3.9	1.0	3.5	0.9	2.9	..

Table III—Duration of Sunshine, in Hours, 1937, in the United States

Stations	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Albuquerque, N. M.	247	235	286	353	361	369	394	324	291	294	291	241	3686
Bismarck, N. D.	135	185	179	109	259	299	493	271	232	170	119	106	2418
Buffalo, N. Y.	90	130	190	100	293	306	327	312	246	137	107	79	2407
Charleston, S. C.	132	175	271	282	302	312	270	283	213	209	231	222	2974
Chicago, Ill.	126	165	208	102	315	306	370	340	266	175	194	103	2769
Del Rio, Tex.	100	165	186	286	238	293	313	335	260	268	207	96	2747
Helena, Mont.	146	163	202	258	342	250	390	371	250	218	122	97	2794
Houston, Tex.	34	120	136	220	325	285	318	254	238	242	130	80	2391
Knoxville, Tenn.	82	132	228	241	324	341	324	277	261	166	150	118	2644
Los Angeles, Calif.	223	177	270	321	227	321	327	333	292	285	240	235	3251
Memphis, Tenn.	32	144	192	232	282	274	251	257	190	210	152	69	2285
Miami, Fla.	227	188	230	238	316	212	262	230	208	251	194	150	2721
Mobile, Ala.	105	151	238	285	351	277	339	250	238	215	173	160	2782
New York, N. Y.	105	150	209	227	333	277	330	250	257	185	190	145	2682
Norfolk, Va.	60	137	256	205	383	341	297	283	260	191	178	159	2710
North Platte, Neb.	105	201	200	260	298	252	375	344	250	226	215	207	3041
Oklahoma City, Okla.	120	206	234	310	328	335	339	323	282	242	175	125	3010
Portland, Me.	120	163	230	213	264	252	346	312	262	181	114	160	2626
Portland, Ore.	119	74	136	147	206	266	353	299	216	171	50	78	2211
San Francisco, Calif.	205	198	250	320	380	393	268	390	234	220	143	172	3002
Sault Ste Marie, Mich.	36	86	201	173	283	280	298	318	179	60	50	35	2005

Table IV—Monthly Mean Temperatures in °F. for 1937

Stations	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
New York	40.4	34.8	36.5	49.0	63.3	70.6	75.4	75.7	65.2	55.4	45.6	35.4
Chicago	26.0	20.4	32.8	46.5	57.9	65.9	74.4	75.7	65.1	..	37.4	20.6
San Francisco	43.6	49.9	54.8	54.5	57.2	61.4	59.3	58.0	61.4	63.4	58.2	55.8
London	42.4	43.5	39.9	49.9	50.1	60.6	63.7	65.7	57.4	52.5	44.3	41.4
Edinburgh	40.1	38.5	35.6	46.1	51.3	55.6	58.0	58.7	54.1	42.7	41.1	37.7
Paris	42.4	45.0	42.6	52.0	60.1	63.0	66.0	67.6	60.3	53.6	42.6	38.5
Berlin	26.0	30.0	39.1	47.8	55.2	61.2	66.2	65.5	54.0	48.0	37.2	25.3
Stockholm	28.8	26.6	29.1	41.5	55.2	61.2	66.2	65.5	54.0	48.0	37.2	25.3
Oslo	28.4	24.6	29.5	44.6	50.3	65.5	65.3	52.7	40.8	46.8	31.8	21.0
Copenhagen	31.5	33.4	34.0	44.2	54.9	59.5	64.4	66.0	57.7	50.9	39.2	32.0
Utrecht	37.2	41.0	39.4	49.3	60.4	63.3	64.6	66.0	58.5	52.0	41.0	34.9
Vienna	27.1	36.1	42.0	49.1	62.4	67.5	67.1	65.7	58.6	51.3	38.7	32.5
Lisbon	51.1	54.7	53.4	59.5	62.2	64.9	71.6	71.1	68.4	63.0	58.4	51.1
Rome	..	..	52.3	53.2	61.2	..	71.1	71.2	..	62.2	54.7	48.2
Leningrad	18.5	20.1	29.1	43.0	53.2	61.3	64.8	66.2	55.6	43.5	35.8	15.8
Moscow	11.7	19.2	29.6	40.5	53.1	63.5	63.9	64.0	56.8	42.4	31.8	16.9
Calcutta	65.3	71.6	80.4	86.6	87.6	85.5	83.6	84.0	84.1	80.8	..	..
Bombay	73.7	75.4	78.3	82.6	85.0	83.7	80.4	81.1	80.9	81.0	..	..
Baghdad	..	..	..	73.4	81.1	80.0	96.0	94.3	90.5	78.9	64.3	52.5
Rangoon	78.6	81.1	82.7	87.9	83.3	82.0	80.5	81.7	80.8	80.4	..	..
Singapore	80.1	80.5	81.9	81.7	81.0	82.3	82.1	82.4	81.0	80.4	80.2	79.7
Capetown	71.1	72.3	69.2	62.5	58.7	56.3	54.7	57.9	59.3	62.9	66.3	70.1
Johannesburg	66.2	66.1	64.7	60.0	58.3	52.2	47.5	50.6	51.3	64.1	68.3	63.3
Salisbury (Rhodesia)	70.4	69.5	68.5	65.3	60.9	58.3	55.1	58.7	66.9	60.9	..	..
Quebec	18	21	21	44	55	63	70	70	56	45	33	..
Toronto	31.1	27.9	28.6	43.3	55.2	62.5	70.0	72.0	60.1	50.2	38.9	27.8
Winnipeg	12.9	2.8	17.1	37.9	55.2	62.5	70.0	72.0	60.1	50.2	38.9	27.8
Victoria, B. C.	31.1	38.6	40.1	47.5	53.4	58.7	60.1	59.4	58.3	54.9	46.2	42.2
Sydney	73.3	71.3	70.2	62.9	59.0	54.0	48.7	53.3	50.5	50.5	64.3	..
Melbourne	64.9	68.6	66.0	58.1	54.9	40.2	48.7	53.3	50.5	50.5	64.3	..
Perth	73.8	75.9	71.7	70.0	61.7	56.7	55.1	59.3	57.9	62.5	68.2	..
Wellington, N. Z.	59.7	57.7	59.1	55.2	57.6	45.4	45.6	48.7	49.5	51.6	57.2	..

The above values are to be regarded as provisional, and subject to slight corrections. Gaps in the tables indicate that the corresponding data are not yet available.

If a layer of magnesium spinel,  $Mg_3(Al_2O_3)_2$ , is substituted, a permanently amorphous coating of better wearing properties is substituted.  
(D. M. L.)

**Meteorology.** For the country as a whole, precipitation in the United States for 1937 averaged slightly above

normal. Only one other year, 1932, has received as much as normal moisture since 1929. The annual falls by States for 1937 ranged from a maximum of 58.87 in. in Louisiana, which was somewhat above normal, to 8.71 in. in Nevada, 99% of normal. However, precipitation for the year was unequally distributed geographically. In the eastern States and the western portions of the country the annual totals were generally above normal, with some Middle Atlantic sections having the heaviest precipitation on record. On the other hand, the amounts were markedly deficient in the Great Plains area from South Dakota southward to Texas, with many localities having only about three-fourths of normal. An outstanding feature of the 1937 precipitation was excessive rainfall in the Ohio valley in the month of January, resulting in the greatest flood of record in that area. During the latter part of the year there was a general tendency to subnormal precipitation in most sections of the country. At the close of the year moisture, especially the subsoil moisture, was markedly deficient in the Great Plains States, but elsewhere conditions were satisfactory rather generally. In the United States there has been a general tendency to subnormal precipitation and above normal temperatures since 1929.

In the United States the year 1937 had more than normal sunshine. There was a slight excess of cloudiness in the north-central portion of the country, and also in the lower Mississippi Valley and western Gulf area, but in all other sections there was less cloudiness than in a normal year. The number of hours of sunshine in 1937 ranged from a total of 4,093, or an average of 11.2 hr. per day for the entire year, at

Yuma, Ariz.; to 1,851 hr., or an average of 5.1 hr. per day, at Binghamton, N.Y. For sunniness New Mexico, with an average of 10.1 hr. daily for the year, was a close second to Arizona, and for cloudiness the upper Great Lakes region, with an average of 5.5 hr. daily was a close second to Southern New York. Normally South-western Arizona and South-eastern California, with an average of about 4,000 hr. of sunshine per year, is the sunniest



portion of the United States, and the north Pacific coast, with about 1,800 hours annually, the cloudiest. For the summer months, June, July, and August, in a considerable south-western portion of the United States there is an average of 13hr. of sunshine daily. The winter season is the cloudiest when parts of the north-east and extreme north-west portion of the country have an average of only 2 or 3 hours of sunshine daily. (W. R. GR.)

Temperatures were well above normal over North-western Europe and the Arctic during January and February, and were unusually high in the Arctic during March. This led to an early southward drift of the Arctic ice in early March, bringing a spell of cold weather in the countries bordering on the eastern Atlantic. Rainfall was generally above normal over most of Europe during the months January to June, with temperatures above normal. During July, temperatures were consequently above normal over most of north-western and northern Europe, and over North America, very high temperatures being recorded in Canada from July 6 to 12. In October, floods followed heavy rains and thunderstorms in the Pyrenees, northern Spain, Tuscany, the Riviera, and Yugoslavia. November was mild over most of Europe, with abnormally low temperatures in eastern Siberia, and in the south-eastern part of the United States. During December, temperatures were below normal over nearly the whole of Europe, over Central Asia, and over the central regions of the United States.

In Australia, rainfall in January ended a drought, and rainfall was generally above normal in March. During the months April to October, rainfall was generally deficient, except in May in South Australia, Western Australia, and Tasmania, where it was above normal. During November, rainfall was above normal over most of the continent. (See also ARCTIC EXPLORATION: *Weather Forecasting*.) (D. BRU.)

**Methodist Church.** In 1737, John and Charles Wesley preached in Georgia. They were followed by George Whitefield, the evangelist, but no societies were organized. The first society was formed in New York, on what is now John street, in 1766 by Philip Embury, a local preacher from Ireland. At about the same time, Robert Strawbridge began to preach in Maryland. The first Methodist building in America was dedicated in New York in 1768. The first conference of Methodists was held in Philadelphia in 1773. Ten preachers were present, representing six circuits and 1,160 members. In 1784 Mr. Wesley consecrated Thomas Coke a bishop and sent him to America, with Whatcoat and Vasey, to organize the societies into a church. Coke and Asbury met at Barrett's Chapel on Nov. 14, 1784, and sent Freeborn Garrison to call the preachers to a Christmas conference at Lovely Lane Chapel, Baltimore. The Methodist Episcopal Church was then organized, Francis Asbury was elected and consecrated a bishop, deacons and elders were ordained, missionaries were sent to Nova Scotia and Antigua, and the first missionary collection of £50 was raised.

The report for 1784 showed 83 preachers, 47 circuits and 15,000 members. In 1937 there were nearly 18,000 preachers, 17,000 circuits and stations, 550 district superintendents and 1,100 men in special appointments. There were 550,000 enrolled in the Epworth Leagues and 3,915,000 in the church schools. During the year, more than 175,000 were baptized and 140,000 were received into full membership in the church. With work on every continent, there are more than 4,700,000 members. About 27,000 churches and 15,700 parsonages are reported, with a net value of \$455,000,000. This does not include the value of buildings and endowments of 98 educational institutions, 72 hospitals, 45 homes for the aged, 43 children's homes, 46 deaconess homes and 26 homes for business girls, or the property of the Woman's Foreign and Woman's Home Missionary Societies. The churches contrib-

uted \$49,000,000 for local expenses during the year and \$7,750,000 for benevolences or \$12.18 per member. There are 22 effective, 2 missionary, 7 central conference and 11 retired bishops. In 1790, the year of the first census, the population of the United States was 3,930,000 and there were 57,600 Methodists or about 1.5 to every hundred residents. In 1930 the population was 123,000,000 and the Methodists numbered 4,400,000 or about 3.6 per hundred.

Besides the Methodist Episcopal Church there are 18 other Methodist organizations, with a total for them all of 43,000 ministers, 61,000 churches and 9,000,000 members. Native Methodist Churches have also grown from mission work in Japan, Brazil, Mexico and Korea.

The final vote on the union of the Methodist Episcopal, the Methodist Episcopal South and the Methodist Protestant Churches, to be known as the Methodist Church, will be taken at the General Conference of the Church South in May 1938. The other two General Conferences and the Annual Conferences of the three churches have already voted favourably. (See also SUNDAY SCHOOLS.) (T. P. P.)

**Great Britain.**—There are in Great Britain 14,617 Methodist churches (an increase of 21 since 1936), with 828,950 members and probationers, an increase of about 10,000, though the net decrease of actual church members is 8,531. The churches have a seating accommodation of 4,052,973. Both Sunday schools and the number of scholars show decreases, there being 484 fewer schools, whilst the scholars (1,056,175) are numerically lower by 66,625.

The total income of the Methodist Church in Great Britain (not including Sunday schools' income or money raised for hospitals and non-Methodist purposes) is approximately £3,950,000.

Overseas, the United Church of Canada has 697,725 members and probationers; the Australasian Methodist Church, 137,149; and the New Zealand Methodist Church, 34,624; while Methodists in Ireland number 30,823. Counting the world over, and including the Methodist Episcopal Church of America, the followers of John Wesley number upwards of 12,000,000.

The annual conference of the Church was held in July at Bradford, Yorks, the Rev. Robert Bond, D.D. (hitherto secretary of the conference), being president, and the Rt. Hon. Isaac Foot, vice-president. This was the sixth conference of the United Methodist Church, and concern was expressed at the decline in church and Sunday school attendances, and emphasis laid on the necessity for an increasing awareness of Christian principles.

Among the subjects discussed were the Wesley Bicentenary, the 200th anniversary of the "Evangelical conversion" of John and Charles Wesley falling on May 24, 1938.

The report of the temperance and social welfare department showed that there were 1,529 Bands of Hope and 3,814 branches of the Abstainers' League. The Order of Christian Citizenship, a strong youth movement, has grown steadily, its members numbering 21,450. Some 2,000 young Methodists participated in an International youth rally at the Albert Hall, London, in January this being the first step towards a projected Christian International Youth Conference in 1939. In 1938 the Methodist Conference will be held in July at Hull, Yorks. The Rev. W. L. Wardle is designated president, and Mr. R. P. Tomlinson, vice-president.

**Metropolitan Museum of Art:** see ART EXHIBITIONS.

**Mexico,** a Federal republic located between the United States and Central America and bordering the Pacific and Atlantic (Gulf of Mexico); language, Spanish; capital, Mexico City; president, Lázaro Cárdenas; area, 767,168 square miles; Population (census, 1930) 16,552,722; (official estimate, 1935) 18,512,837. In 1930 approximately 55% of the population was



mestizo, 29% Indian, and 15% white, with less than 1% (150,000) foreigners. Approximately 14% of the total population speaks only Indian tongues. There are some negro and part negro elements on the Gulf of Mexico coast. The chief cities are: Mexico City, 1,029,068; Guadalajara, 184,826; Monterrey, 137,388; Puebla, 122,914; Mérida, 110,183.

**History.**—Mexico includes 28 States, each with its own governor and legislature and a limited autonomy, and two territories and a Federal district, with governors appointed by the president. The national Government is administered by a president elected for six years, and a congress.

Developments in Mexico in 1937 centred around governmental acts calculated to make effective the six-year plan of 1934, and thereby to bring to an orderly conclusion the social revolution. Economic conditions were apparently good up until mid-year, but real wages were far below the 1934 level, and on Aug. 1, 500,000 workers demonstrated in Mexico City, protesting against the high cost of living. The deceptive prosperity was partly due to a revived demand for minerals and oil from warring Europe and Asia, a depreciation of currency which boomed export trade, new capital investments, a boom in building and public works, and an increased tourist trade. An agricultural crisis raised foodstuff prices considerably, while the nation-wide oil strikes during the summer contributed to a business recession which continued throughout the rest of the year. Various Government emergency measures failed to remedy the situation, and it was a disputed question whether the administration's program of bettering the agrarian and proletarian classes at the expense of foreign and domestic capitalists had been economically sound.

The dominant personality of Mexico was President Cárdenas himself, who continued to maintain a personal hold upon the people stronger than that of any Mexican political leader since Benito Juárez in the mid-19th century. This rested largely upon his ability to dramatize himself, as in his earlier opening of the telegraph offices to the public for free short messages of criticism and suggestion to the central Government and by his literal conversion of old cannon into plowshares, and upon his democracy of manner, exhibited in his insistence upon living in a modest home instead of the traditional presidential palace at Chapultepec.

Politically, the year opened with a split over the attitude to be taken toward Lev Trotsky when he entered Mexico in January. On Feb. 9, Cárdenas issued an amnesty to all political exiles, some 10,000 in number. Former President Calles was the sole exception. In the July primaries the National Revolutionary party (the official party) won a heavy majority in congress. In August a political crisis developed in which Minister of Agriculture Saturnino Cedillo, last remaining Calles partisan in the cabinet, was forced out of office. He retired to his own State of San Luis Potosí and began raising a private army. President Cárdenas proceeded against him with Federal troops, but no open clash occurred. Tension continued, however, throughout September and October. In September, the president opened congress with a speech on the state of the nation, in which the keynote was that the administration intended to go forward firmly and fearlessly with its social and industrial reforms. He declared the results of the first half of his six-year term to have been: railway nationalization; bolstering of the nation's oil economy with steps toward nationalization of that industry; increased agricultural production as a result of the continuation of land divisions among the agrarian workers; and a gold reserve covering almost 40% of the outstanding banknotes. In November, Cárdenas gained judicial support for his land-division program when the courts declined to judge the constitutionality of his land decrees and refused an injunction to curtail further land expropriations. In December, Cárdenas changed the name of the National Revolutionary party



WORLD PRODUCTION OF SILVER in 1937 (276,000,000 fine ounces), showing part contributed by Mexico, the leading producing country

to "National Party of Workers and Soldiers," and ordered that Government employees no longer be required to make contributions to the party funds. These moves were to make the party one of the people rather than of Government employees.

The Church problem passed 1937 without violence except in some States where local persecutions were continued. The controversy had become one of State instead of Federal attacks on the Church, and the

president himself adopted a conciliatory policy toward religion. The Easter message of Pope Pius XI did not, as in the past, condemn Mexico's Government as being tyrannical; instead he followed a policy of hopeful moderation by appointing, in March, a friend of Cárdenas, Luis María Martínez y Rodríguez, as archbishop of Mexico. Government restrictions on the Church were lifted for the installation ceremony of the new archbishop in April. In June Cárdenas unexpectedly moved to nationalize the consolidated railways and run them for public service instead of private profit. A department of railways was created to administer them.

Outstanding among Cárdenas' activities was a land policy of expropriation and distribution of land among the peasants. The most important of these measures was the expropriation of the henequen plantations of Yucatan in the summer. In keeping with the agrarian reform program, these vast estates were divided among the peasants and ordered organized into communal holdings. In Sonora foreign interest was affected by land appropriation and distribution as they had been in the Laguna region of Durango and Coahuila in August 1936. These actions were in conformity with provisions of the Constitution of 1917, making large estates liable to partition and distribution among the country's peasant population. During President Cárdenas first three years ending in 1937, 5,000,000ac., more than all the land distributed during the two previous decades, were expropriated for the benefit of more than 500,000 landless peasants. Large landholders still retained over 150,000ac., or three times as much as that cultivated by the newly-landed peasants. Approximately 2,500,000 peasants were still without land. The redistributed land was placed in the hands of separate co-operative units closely associated through the National bank of Ejido Credit, the Government's chief agent in this project, and thus formed a huge collective farm. The functions of the Ejido Credit bank, founded in 1936, are to finance the peasants, advise them on planting, and supervise marketing operations.

The petroleum problem, relatively quiescent since 1928, became active again during 1937 with crises in May and June and in the closing weeks of the year. Late in May, 18,000 members of the Mexican Syndicate of Petroleum Workers struck against 17 foreign-owned oil companies, paralyzing the nation's \$500,000,000 petroleum industry. The strike was lifted only after President Cárdenas persuaded the workers to submit their demands to a Federal conciliation board. In August a special commission ordered wages increased to a 4.90 peso minimum, and a maximum 40-hour week, with a provision for a mixed commission of labour, company, and Government representatives to adjudicate future disputes. The entire year was marked by a bolstering of the nation's oil economy with steps suggesting nationalization of that industry, through the encouragement and support given petroleum labour strikes, the nationalization of millions of acres of foreign



oil lands, and the imposition of drastic limitations on the foreign companies in Mexico. The Government's avowed intention was to throw off the yoke which British and United States oil imperialism had maintained in a stranglehold on Mexico's petroleum economy since the days of Porfirio Díaz. Thus, at the expense of foreign capital and management, the huge profits from that industry were to be deflected from foreign capital to Mexican labour.

On December 18 salaries of Mexican petroleum workers were ordered increased by about one-third, thus creating a privileged class in the ranks of Mexican labour and setting a yardstick by which the Federal Government hoped to develop further its campaign to create a larger middle class in Mexico. This affected chiefly the large British and North American companies, and the latter protested their inability to pay the wage increases. The Labor Board replied that confiscation of property would then be resorted to in order to meet the 1,500,000-pesos strike wages. As the year closed, discussions had failed to disclose a solution acceptable to the foreign companies. Increased costs involved in making the award effective, it was asserted, would add so greatly to the cost of producing and refining oil as to lose all foreign markets to Mexico's supply. Their only hope as the year closed was to obtain a Supreme Court injunction to prevent the decision of the Labor Board from becoming effective on Jan. 3, 1938. An additional complication of the oil problem arose from differences between the status of British and North American companies, with the former agreeing to pay 15 to 35% royalties to the Government in return for the privilege of developing the new Pozarica field, regarded as one of the richest in the world. This arrangement, it was prophesied, would bring a shift of Mexican oil trade to Great Britain at the expense of the United States.

During the year Mexican foreign relations were generally friendly, despite the Government's strong anti-foreign oil policy. The Government expressed itself frankly in favour of the loyalist Government of Spain as the legitimate Government, and received and aided Spanish war orphans. Mexico continued to be a centre for political exiles from all parts of America. On December 21, ratifications were exchanged with the United States for the nullification of article 8 of the Gadsden Treaty of 1853, under which that country held rights which technically infringed upon the sovereignty of Mexico.

**Trade and Communication.**—Mexico's external communications are by steamship service, especially through Vera Cruz, by three main railways to the United States, and one to Guatemala; by increasingly important air transport routes north and south and to the West Indies; and by highway, notably through Nuevo Laredo. There are over 15,000 mi. of railways. Construction of 1,612 kms. of additional railway in four main projects, at an estimated cost of 150,000,000 pesos, was continued during 1937. Completion of all was planned by 1941, with current construction on schedule. Highway construction, under the Six-Year Plan, promises to revolutionize Mexican internal communications and materially affect the national economic life. The main arteries are: the 1,050 mi. Nuevo Laredo-Acapulco highway, opened in 1936, and the 2,700 mi. Nogales-Chiapas highway, a link of the Pan-American highway, whose construction was begun in 1937, with completion at a total cost of 240,000,000 pesos promised by the end of 1938. The national gasoline tax, yielding 31,306,925 pesos in 1936, is devoted exclusively to highway development. In July 1937 tentative plans were announced for construction of five cargo vessels for the development of trade on the west coast. Opening of new airways under Government subsidy is being pushed.

In 1936 exports totalled 775,313,330 pesos, of which mineral

products, principally petroleum, silver, gold, and lead, constituted 49%, with a further 25.75% in gold and silver bullion. In the first half of 1937 exports increased in value 5%. The principal customer is the United States, taking approximately 60% annually, with Great Britain second. In 1936 imports totalled 464,142,705 pesos, with machinery, automobiles, and other manufactured goods the principal commodities. In the first five months of 1937 imports increased 38%. The United States supplies over 60% of the imports. The relative increase in imports was officially ascribed to heavy purchases of machinery, \$38,000,000 for Government account alone in the first nine months of the year.

**Agriculture and Mining.**—Resources are mineral and agricultural. A leading world petroleum producer, Mexico's 1936 oil output was 40,400,000 barrels. In the first eight months of 1937 it was 30,250,000 bbls., a 15% increase for that period, but strikes caused a material decline in the latter part of the year. Mexico is also a leading producer of silver, as well as gold, copper, lead, zinc, and other minerals.

As the principal crop, corn, is the country's chief food source, Mexico is almost agriculturally self-sufficient. Cotton has recently come to the fore. Important exports are coffee, henequen, bananas, and chickpeas. In 1930 there were 10,082,958 head of cattle, mainly in the northern States.

A further resource, the tourist trade, increased materially in 1937 over 1936 when 99,570 tourists spent \$14,838,142.

**Banking and Finance.**—The monetary unit is the peso (value: 27.8¢ U.S.). The budget for 1937 was for 333,220,689 pesos (287,198,785 pesos in 1936), with receipts estimated at 330,613,642 pesos. Actual receipts for the first eight months of 1937 were 33% in excess of estimates.

**Education.**—Urban education is supported by the States with total 1937 budgets of 21,994,839 pesos, 17% more than in 1934; rural education, by the national Government. In 1936, 10,199 rural schools, with 14,523 teachers and 647,127 students, cost 23,696,029 pesos, a heavy increase over 1934, when there were over 8,165 schools, 10,233 teachers, and 582,820 students, maintained at a cost of 12,371,914 pesos.

**Army and Navy.**—The army and navy personnel numbers 49,485. The navy includes four gunboats and 25 other vessels. The 1937 budget provided 80,285,165 pesos for army and navy.

(L. W. BE.)

**Mexico City,** capital of Mexico, in the valley of Mexico on the south central plateau. The area is 15 sq. mi.; population (official estimate, 1935) 1,029,068. The Government of the city is controlled by the Federal Government through the governor of the Federal district. The city in recent years has expanded, absorbing the adjacent cities Tacubaya, Mixcoac, and Tacuba. A \$5,000,000 municipal waterworks system utilizes mountain springs for an abundant fresh water supply. Mexico City and its immediate vicinity abound with historic sights which attracted over 100,000 tourists in 1937. Touring has increased tremendously since the completion, in 1936, of the Nuevo Laredo highway from the United States border. Building permits during 1937 showed a notable increase over the preceding year both in number and volume.

(L. W. BE.)

**Mica.** For any satisfactory consideration of the subject of mica, it must clearly be understood whether sheet mica or scrap mica is under discussion, for the uses of the two types are almost as distinct from each other as if two different minerals were involved. For example, statistics show a production of 19,600 metric tons of mica in the United States in 1936, 9,000 tons in India, a similar amount in the Soviet Union, 640 tons in Canada, 500 tons in South Africa, 450 tons in Madagascar, and



smaller amounts in other countries, totalling some 40,000 tons. Analysis of these figures shows that only 600 tons of the United States output is sheet mica, and the remainder scrap, while the Indian and Madagascan outputs are predominantly sheet, although they contain a small undetermined amount of scrap; Canadian production contains about 10% sheet, and the Russian, while highly uncertain, is probably well under that amount; the South African figure includes only a few hundred pounds of sheet, but most of the smaller producers ship nothing but sheet material. All told, then, on the average sheet mica constitutes about 25% of the total, and scrap 75%. The chief use of sheet mica is in electrical insulation, with small amounts for stove glazing, phonograph disks, lamp chimneys, etc. Scrap mica is ground and goes mainly to the roofing industry, with smaller amounts to wall-paper, paints and rubber.

Industrial recovery and rearmament programs have made an active demand for mica, and the outputs of all the leading producers have recovered to beyond the pre-depression level, except Canada and the sheet output of the United States. India has shown a particularly strong recovery, with a 1936 output nearly four times the 1932 low, and a half greater than the 1929 high. Canada, however, has had a continued decline to a 1935 output only 15% of the 1929 high, with little recovery in 1936. Demand for scrap mica in the United States had practically no depression drop, and now stands at better than three times the 1929 figure, but sheet mica in 1932 was only one-sixth of the 1929 output, and was still one-third below 1929 in 1936. (G. A. Ro.)

**Michigan**, twenty-sixth State to become a member of the United States, popularly known as the "Wolverine State"; area, 57,480 sq.mi. (exclusive of 40,000 sq.mi. of Great Lakes' water surface within her boundaries); population (U.S. census, 1930) 4,842,325; (estimate Jan. 1, 1938) 5,293,000. Capital, Lansing, 78,397. Larger cities are Detroit, 1,568,662; Grand Rapids, 168,592; Flint, 156,492; Saginaw, 80,715. Of the State's population, 3,302,075 are urban, or 68.2%; 4,650,171 whites; 192,154 coloured; of the whites, 3,809,903 native born, 840,268 foreign born; about 350,000 of the total population live in the 15 cities of the upper peninsula, which comprises about one-fourth of the State's area.

**History.**—The year 1937, during which Michigan began her 101st year as a member of the Union, proved to be a peculiarly eventful one. Upon Frank Murphy, who, returning to the State after four years as governor general of the Philippine Islands, had defeated Governor Frank D. Fitzgerald for re-election in November 1936, fell the responsibility of formulating a policy for meeting the most serious industrial crisis which ever confronted the State. Only a few days after his inauguration as governor on January 1, the first large-scale sit-down strike in the United States was undertaken in the Flint plant of the Fisher Body Co., a subsidiary of the General Motors Corporation. It rapidly spread to other General Motors units. Except when rioting in Flint on January 11 prompted him to send the National Guard there, Murphy followed a policy of non-interference with the sit-down. When it appeared that he might be able to negotiate

an agreement in the General Motors strike, he requested Genesee county officers to delay the enforcement of a court order that sit-down strikers must leave the plants. The ensuing negotiations, with Governor Murphy as mediator, ended the General Motors strike 44 days after it was begun, and 140,000 employees returned to work. Strikes which broke out in March in other large automobile plants in the State were similarly settled in April, but in the meantime the movement had begun to spread to other industries, to hotels, stores and business establishments of all kinds. Rapid strides were made in the unionization of industry. In June a "labour holiday" in Lansing, an unauthorized power strike in the Saginaw valley, and C.I.O. reverses in Monroe tended to check the sit-down movement. The achievements of the C.I.O. organizers were illustrated in the fall elections in Detroit when the C.I.O. candidate, Patrick H. O'Brien, won second place in the mayoralty primary, despite the vigorous opposition of the three Detroit dailies. In the November election, however, O'Brien was decisively defeated by Richard W. Reading. The summer months witnessed an intensive struggle between C.I.O. organizers and the Ford Motor Co.; at the end of the year the latter was in sharp conflict with the National Labor Relations Board. The most striking fact in the history of 1937 labour struggles in Michigan was the absence of bloodshed.

The accomplishments of the State legislature which convened in January were considerable. A majority of the 100 members of the House of Representatives belonged to the Democratic party. The 32 members of the senate were closely divided along party lines; a conservative-liberal division within each party group so modified the alignment with respect to particular measures that the resulting legislation was frequently non-partisan in character. Among the more significant enactments were laws placing the entire State Government under the Civil Service; requiring applicants for marriage licenses to furnish certificates of freedom from venereal diseases; raising the standards for applicants to practice healing; effecting the consolidation under a single executive of prisons, probation, and parole activities; consolidating the administration of the various State institutions for the mentally ill; establishing the secret primary; making more effective collections under the sales tax; revising the State banking laws. The legislature also liberalized requirements for old age assistance. The administration was disappointed in the legislature's failure to pass a rural electrification measure, and in its neglect to adopt a labour relations measure to which the governor could give his approval. The legislature embarrassed the governor by appropriating \$18,000,000 more than estimated income; however, drastic cuts by the governor brought the budget within \$3,000,000 of balancing at \$107,000,000.

Such factors as the regular alternation in control by the two major parties in the four previous biennial November elections, the contributory effect of the Roosevelt landslide in the Democratic victory in the State in November 1936, and the potential political results of Governor Murphy's policy with respect to sit-down strikes, intensified the interest of political observers in the spring election of 1937. The Democrats made material gains: Edmund C. Shields and John D. Lynch were elected regents of the University of Michigan; Mrs. Lavina Masselink and James K. Jakway, chosen as members of the State board of agriculture, made that body for the first time in 40 years predominantly Democratic; Thomas F. McAllister was elected Justice of the Supreme Court; and Murray D. Van Wagoner, State highway commissioner. Republicans elected were: Walter H. North, Justice of the Supreme Court; Eugene B. Elliott, State superintendent of public instruction; Frank Cody, member of the State board of education.

Governor Murphy's appointments to important office attracted much attention by reason of being frequently non-partisan in char-



FRANK MURPHY, governor of Michigan



acter. Charles T. Fisher, Jr. was made State banking commissioner; upon his resignation at the end of the year, he was succeeded by Alvan Macauley, Jr. Richard T. Frankenstein, prominent labour organizer, was appointed a member of the Emergency Relief Commission. The appointment of John N. Fegan, Democrat, to succeed Melville B. McPherson, Republican, in the chairmanship of the State tax commission, provoked the latter to challenge the governor's power to designate who should serve as chairman of the commission—a dispute accentuated in importance by the fact that the governor had recently appointed a tax reform study commission.

**Education.**—In the field of education, the total State aid for schools was increased to \$40,200,000. Retirement fund benefits to teachers were increased from a maximum of \$500 per teacher to a maximum of \$1,200, the State for the first time contributing a portion of the income of the fund. Considerable demand was evidenced for a constitutional amendment making the office of superintendent of public instruction appointive rather than elective.

**Banking.**—The State banking department had under its supervision in 1937 some 365 State banks, seven industrial banks, 140 credit unions, and 175 small loan licensees—institutions having resources in excess of \$800,000,000. In its supervision of the liquidation of some 225 projects, the department speeded up the process, and placed particular attention on the collection of stockholders' assessments. At the close of the year exact figures respecting business progress were not available. In 1935, 5,592 manufacturing concerns produced goods valued at \$4,020,909,490, with motor vehicles and parts reaching \$2,263,088,259. Sales tax collections, totalling \$57,936,450, were more than 15% in excess of those of 1936. Reports on the tourist business, ranked as the second most important in the State, indicated a 15% increase over 1936, and placed Michigan income from this source at about 8% of the total for the nation. One of the most significant developments in the agricultural areas was the process of rural electrification, which in spite of the failure to obtain State sponsorship, was extended by some 4,000 miles of lines. The national unemployment census statistics published at the close of the year gave Michigan, which is seventh in population rank, as ninth among the States in the number of jobless. At about the same time an optimistic note was sounded by the announcement of several of the large automobile plants of a considerable increase in re-employment in the near future.

**Agriculture and Mining.**—In 1935 Michigan had farms covering 18,459,922 ac. with crops valued at \$70,597,000 and livestock items at \$115,023,000. Mineral production for the same year was \$77,149,256, led by iron ore (\$20,788,153) and petroleum (\$16,350,000). (L. G. V. V.)

**Michigan, University of.** The year 1937 was of special significance to the University of Michigan since it marked the completion of the university's first century following the first meeting of the board of regents held in June 1837, in Ann Arbor. This event was commemorated by a five-day celebration held in June 1937. The program included not only a survey of the university's past but a consideration of its future obligations and responsibilities in the modern social organization. With one or two exceptions, the 25 speakers were numbered among the 85,000 graduates of the university, since it was felt that their familiarity with the practical problems of the contemporary world, combined with their knowledge of the university, would give their mature judgment a special significance. The celebration was, in a unique sense, a family affair. During the past year Michigan has also undertaken, in a practical way, to emphasize its obligations to society through the formulation

of a project for educational centres throughout the State, to be maintained jointly by local groups and representatives of the faculties, as a further development of its programs in extension alumni education, and post-graduate medical courses. Thus, it is planned to develop short courses in such fields as seem indicated by local conditions, not for college credits but to furnish information for those who seek guidance in their problems. (A. G. R.)

**Microphotography:** *see* LIBRARIES; PHOTOGRAPHY: *Documentary Films*.

**Midway Islands,** a group of two small islands and several sand islets in lat. 28° 13' N., and long 177° 23' W., 1,149 miles N.W. of Honolulu, belonging to the United States of America. The larger is Sand island; about 85 acres; maximum height above sea level, 43 feet. The other is Eastern island; about 328 acres and very low. There are no native or permanent inhabitants.

They were discovered on July 5, 1859, by Captain N. C. Brooks, of the American-owned Hawaiian bark, "Gambier," who took possession in the name of the United States. Captain Reynolds, in the "U.S.S. Lackawanna," took possession formally on Aug. 28, 1867. In 1903 the islands were made a naval reservation, and they have been under the jurisdiction of the U.S. Navy Department since. Sand island is the site of a commercial cable station and the Navy Department has granted Pan-American Airways permission to establish temporary commercial air service facilities on that island in connection with its trans-Pacific airline operations. Both islands are little more than sand dunes and are non-productive. (O. M. H.)

**Migratory Bird Treaties:** *see* WILD LIFE CONSERVATION *Migratory Bird Treaties*.

**Military and Naval Forces:** *see* ARMIES OF THE WORLD; AIR FORCES: *World*; NAVIES OF THE WORLD; REARMAMENT

**Milk.** Among developments that focused the attention of United States milk producers and distributors in 1937 were: 1. Variable and rising transportation costs. 2. Recurring price struggles. 3. The widening spread between fresh and evaporated milk prices. 4. The increasing volume of milk sold in store. 5. A movement toward consumer co-operative buying. 6. Increase in the use of paper containers. In the United Kingdom 1937 marked the issuance of a white paper which proposed that the Milk Commission insure the price of milk to British producers in order to maintain a milk supply for the manufacture of butter, cheese and other milk products. Milk production was downwar in England during 1937, especially for manufacturing purposes and in the autumn prices for the ensuing 12 months were raised from 15s. 3d. to 15s. 11d. per 12 gallons.

About half the U.S. milk supply is produced in one-third of the year, the seasons when cows freshen. This condition, plus large producing capacity and restrictions on moving milk from one region to another, makes for unevenness in markets and prices and leads to recurring disagreements and milk strikes. Probably outstanding in the industry's 1937 disturbances were those in New York where a new organization, the Dairy Farmers Union, headed a movement of producers to obtain higher prices.

In New York city there was a decided increase in the volume of milk sold in grocery stores, as against delivered milk, and movement toward consumer co-operatives to reduce prices. The State of New York appropriated \$50,000 to employ an accounting firm to investigate the costs and profits of milk dealers of whom there are about 4,000 licenced in the State. The State audit is to be reported early in 1938.



Transportation costs and the heavy expense of unnecessary duplication of trucks both in picking up milk in the country and subsequently delivering it in the city were subjects of renewed agitation among dairy co-operatives. Improvements in processing methods have enabled tinned milk to be sold at gradually decreasing prices, while fresh milk tends to increase in market price. Although milk is marketed in 676 cities under standard ordinances modelled on recommendations of the U.S. Public Health Service, there is an absence of uniformity of laws governing interstate trade in milk and many cities restrict their milk supply to a milk shed or area within fifty miles or so of the city, on the theory that milk from greater distances may not be kept fresh. This handicaps the movement of milk from surplus areas.

The National Co-operative Milk Producers Federation, which represents 350,000 dairy farmers, held its 21st annual convention in Baltimore, Maryland, Nov. 1-2, 1937. (See BUTTER; CHEESE; DAIRYING; MARKETING BOARDS.) (S. O. R.)

**Milk Wool (Lanital):** see WOOL: Wool Research.

**Miller-Tydings Act:** see ADVERTISING: Legislation.

**Mills, Ogden Livingston** (1884-1937), a Republican party leader and former secretary of the treasury, was an active figure in American politics from 1910 to 1933. Born, Aug. 23, 1884, of wealthy Newport, R.I., parents, he received his bachelor and legal degrees from Harvard University in 1904 and 1907. As early as 1910, he was chosen treasurer of the Republican County Committee of New York County. He was nominated for the national House of Representatives in 1912, but was defeated because of the split in the Republican party. In 1914, however, he was elected to the State Senate where he fought to liberalize the party. After serving in France for 19 months, he became a member of the U.S. House of Representatives, and in 1926 was defeated by Alfred E. Smith in a contest for governor of New York. The next year, however, he was appointed assistant secretary of the treasury, a post which he held until he became full secretary in Feb. 1932. With the close of the Hoover administration in March 1933, he retired from active participation in party affairs but he continued to urge reforms and was occasionally mentioned as a possible presidential candidate. His death occurred in New York City, Oct. 11, 1937.

**Mineralogy.** In noteworthy articles during 1937, Bayley discussed mineralogy's contribution to science and industry (*American Mineralogist*, May) and Winchell reported on his zeolite researches (*ibid.*, February). A significant study of silicosis was made by Emmons and Wilcox (*ibid.*, April). In three papers the classification of natural silicates was treated (*ibid.*, May, Berman; November and December, Swartz). Gratton de-

scribed recently developed technique in mineralography, while the accessory minerals of igneous rocks were studied by Taylor (both *ibid.*, May). Tilley discussed the paragenesis of kyanite-amphibolites, and Anderson and Payne described the magnesium-zinc-spinels of Ceylon (both *Mineralogical Magazine*, September). Spencer reviewed the tecktite problem (*ibid.*, March).

The special May number of the *American Mineralogist* was of unusual interest and size. It included 35 articles totalling 435 pages, and was dedicated to Professor Charles Palache by his friends and former students. Professor Palache has been a member of the Department of Mineralogy of Harvard university for over 40 years. He is a past president of the Mineralogical and Geological Societies of America.

**Gem Minerals.**—Interest in authoritative information about gem stones was continued by wholesale and retail gem dealers. Several regional meetings were held under the direction of Mr. Robert M. Shipley of Los Angeles, Calif. Important texts, methods, and apparatus of service in the determination of gems were demonstrated. Through the recent publication in Great Britain, Germany, and the United States of books on gems, adapted to the general reader, public interest has been aroused. Steady growth of the amateur lapidary movement is also to be noted.

Blue zircon, often called the "gem of mystery," continues its popular appeal. Its occurrence, physical and optical properties, and methods of heat treatment were discussed by Anderson, Chudoba, and Payne (*Gemmologist*, London); and by Eppler, Brauns, and Wild (*Deutsche Goldschmiede Zeitung*). Eppler also submitted data on the ideal cutting of aquamarine and other varieties of beryl, of tourmaline, and of citrine or yellow quartz, erroneously called "topaz" in the trade (*ibid.*). He believes that stones cut according to his directions possess greater brilliancy. (See also GEMS AND PRECIOUS STONES.)

**Roebling Medal.**—A significant event in American mineralogy was the first award of the Roebling Medal of the Mineralogical Society of America to Professor Charles Palache at Washington, D.C., Dec. 29.

**Necrology.**—Three widely recognized leaders in mineralogical science died in 1937. Alexander H. Phillips died on Jan. 20 at the age of 71. For 49 years he was a member of the faculty of Princeton university. In 1931 he was president of the Mineralogical Society of America. On Jan. 28, Reinhard Brauns of the University of Bonn, Germany, died at the age of 75. He was noted for his many articles on the optical character of crystals, on gems, and on the rocks and minerals of the volcanic areas of the Rhineland and Laacher See District. On Dec. 12, Arthur Hutchinson, formerly Professor of Mineralogy at Cambridge university, England, died at the age of 71. He was a past president (1921-24) of the Mineralogical Society of Great Britain.

(E. H. K.R.)

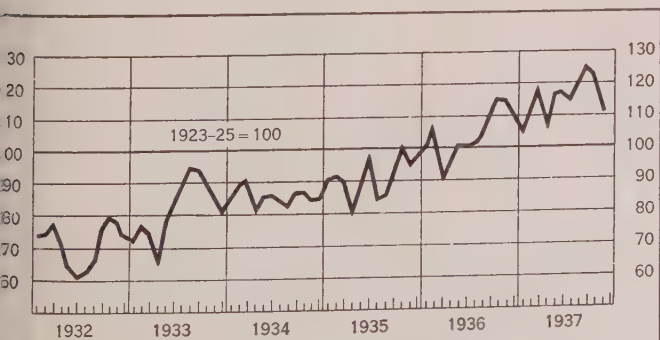
**Miniature Photography:** see PHOTOGRAPHY: Miniature Photography.

**Minimum Wage:** see LABOUR LEGISLATION.

**Ministers of the Crown Act:** see LAW AND LEGISLATION.

**Minnesota,** a north central State of the United States popularly known as the "Gopher State," has an area of 84,682 sq.mi., of which 3,824 are water. Population, U.S. census of 1930, 2,563,953, estimated July 1, 1937, 2,652,000. Capital, St. Paul, 271,606. The only city in the State with a larger population was Minneapolis, 464,356. Duluth had 101,463. Of the State's population 1,257,616, or 49% were urban. There were 2,538,973 whites, 9,445 coloured, 2,150,697 native-born, and 388,294 foreign-born.

**History.**—Minnesota business, bolstered by considerable gains



MINERAL PRODUCTION in the United States: Federal Reserve Board index, without adjustment for seasonal variation



in the first half of 1937, finished the year with net advances of 5 to 15% over 1936. Among the most marked gains were those in farm machinery, implements, and tractors. Good crops over much of the State yielded a farm income materially above that of the previous year, but because of the rise of prices the purchasing power of Minnesota farmers remained about the same. Labour history in 1937 was marked by strikes and violence. Major labour disputes included truck drivers, laundry workers, five and ten cent stores, mail order houses, hotel workers, brick makers, and automobile salesmen. A timber workers' strike caused a prolonged disturbance in northern Minnesota. A growing friction between A.F. of L. and C.I.O. unions was marked by the ousting of the C.I.O. unions from the central labour councils.



ELMER BENSON, governor of Minnesota

Officers of the State were Governor, Elmer A. Benson; secretary of State, Mike Holm; treasurer, C. A. Halvorson; auditor, Stafford King; attorney-general, William S. Ervin; commissioner of education, John G. Rockwell; chief justice, Henry M. Gallagher.

In the legislative session of 1937 the Farmer-Labor party attempted to fulfill its mandate from the 1936 elections. Governor Benson, inaugurated Jan. 5, proposed reforms in education, taxation, conservation, labour, and other fields. Clashes between a conservative Senate and a Farmer-Labor House impeded action. A deadlock on tax measures prolonged the session a week beyond the legal deadline, and a special session was called after efforts to break the deadlock had failed. Out of the regular and special sessions emerged a dozen tax bills effecting increases in virtually all taxes save the property tax. Other legislation included acts establishing county welfare boards; creating a State geographic board; amending the Workmen's Compensation Law to require all employers to carry compensation insurance; eliminating State levies on homesteads; extending highway traffic regulation; and authorizing cities and villages to acquire recreational facilities and to operate programs of public recreation. A thoroughgoing study of State and local government, made under gubernatorial authority, eventuated in a detailed report in the nature of a State finance and tax survey by Harry Fiterman and a demand by the governor for elimination of overlapping activities, for reorganization, and for economy.

**Education.**—Minnesota school enrolment for 1936–37 was 530,485 pupils, 22,046 teachers; total public school expenditure, \$48,169,809. The State has an illiteracy rate of 1.3%. The University of Minnesota had a total enrolment of 32,369, with a regular enrolment of 16,277 students, in 1937. A dozen or more denominational colleges were active, many of them with increasing enrolments.

**Charities and Correction.**—The State Board of Control,

created in 1901, is composed of three six-year appointees. In 1937 it had general control over 19 State institutions and supervision of 14 tuberculosis sanatoria. The total number of inmates in the State institutions was 17,463 in 1936.

**Banking and Finance.**—On June 30, 1937, there were 68 banks (196 of them national banks) with deposits of \$941,542,221 and resources of \$1,046,784,366. Taxable valuation of real and personal property in the fiscal year ending June 30, 1937, was \$1,371,980,515. Moneys and credits were \$656,890,258. The net State debt on June 30, 1937, was \$134,155,893.

**Agriculture, Manufactures.**—In 1936 Minnesota had 181,235 farms, with a total area of 30,238,648 acres. The total value of all farm property in 1936 was \$249,181,000; the gross income from crops, \$83,006,000; and from live stock, \$222,750,000. Measured by total gross farm income, Minnesota ranked seventh among the States. It led in production of butter, with 272,585,000 lbs. in 1936; in barley, with 31,620,000 bu.; in rye, with 4,325,000 bu.; and in flaxseed, with 4,235,000 bushels. It was third in production of oats, with 94,376,000 bu.; and fifth in corn, with 88,331,000 bushels.

The 1935 Federal census of business reported 3,738 manufacturing establishments in Minnesota, employing 81,600 wage earners who earned \$84,720,942. Fourteen meat-packing establishments reached a production valued at \$150,969,114; 74 flour and grain mills, \$101,129,180; and 836 dairies, \$80,158,458. Iron ore production in 1936 amounted to 33,781,763 tons. Flour production in 1936 was 12,726,000 barrels.

(T. C. B.)

**Minnesota, University of.** The university on the basis of enrolment ranks third among American universities. In 1936–37 it had an aggregate of 34,377 students of which 20,024 were candidates for degrees—a growth of 9.3% over the corresponding number of degree students in 1935–36. The legislature in 1937 increased the university appropriation for general maintenance from \$3,100,000 during each year of the biennium 1934–36 to \$3,500,000 for each year of the biennium 1937–39, thus permitting full restoration of all salaries and providing additions to staff. Legislative funds were also appropriated for a new school of forestry building, a business administration unit in a new social science building, and to furnish and operate a previously constructed psychopathic unit of the university hospitals.

Educational and research programs in the Institute of Technology have been advanced through construction and opening of hydraulics laboratory at the head of St. Anthony falls at Minneapolis, and by the acquisition of additional space for work in experimental engineering. Because the university was designated by the United States Public Health Service as a regional public health training centre, work in this field has been greatly expanded. Grants from major foundations have been received to support a five-year program in training for public service; for a three-year study of the needs, abilities, and characteristics of late adolescents in relation to education of the type developed by the university's general college; for an evaluation of the general college program; for special research in biology and medicine; for research in art education; and for other purposes.

(L. D. C.)

**Minorities.** There was little improvement in the lot of national minorities in 1937. The growth of extreme nationalism, accompanied by a tendency to abandon the forms of democracy in favour of authoritarian forms of government, weighed heavily upon them; and there were few countries in which their members were not regarded and treated as second class citizens. "National solidarity" was an all too common aim



which meant, not winning the loyalty of all citizens by liberal treatment, but strengthening the ruling majority at the expense of the subject minorities.

The chief minority problem of 1937 was undoubtedly that of the Germans in Czechoslovakia (*q.v.*) There the Sudeten Germans, or the 66% of them that were followers of Henlein, had been enjoying since 1935 the powerful support and sympathy of Germany. The intervention of the Reich, though it forced the Czechs to face the problem, also complicated it, since it converted a purely internal question into an international issue. The Sudeten Germans were thereby drawn into the game of power politics. Once Germany had taken up their cause, any concession which the Czechs might make seemed a concession to Naziism. Nevertheless, Czech statesmen have given proof of their anxiety to deal justly by the Sudeten Germans.

In February the Czechoslovak Government granted five out of seven demands presented to them by the "activist" German parties (who are anti-Nazi, belong to the Government Coalition, and represent one-third of the total German population). A wide agreement was drawn up embracing the general principles of minority treatment. The Czechs insisted that they were prepared to go to the limit of concessions that would not endanger the State. What they were not prepared to do was to grant the *Völkische* autonomy demanded by Henlein, which in their view would mean the disruption of Czechoslovakia. Some results have been achieved since February, but progress is necessarily slow, because the vital condition, a better psychological atmosphere, is still absent. Until the international situation improves, that condition is unlikely to be realized.

On July 15, the Geneva Convention, which in 1922 had established an international régime of supervision and arbitration in Upper Silesia, expired, and its valuable machinery of conciliation disappeared. For 15 years it had successfully performed a task of great difficulty, and must be accounted one of the positive successes of the League. In November Germany and Poland signed an agreement that guaranteed for their respective minorities a bare minimum of cultural and general rights. The rights so covered fell far short of those enjoyed by, for instance, the Sudeten Germans.

In September the Hungarian minority in Rumania presented a petition to the League against a circular which had been sent by the Rumanian minister of commerce to some 72 firms requiring them to replace a large proportion of their employees with full-blooded Rumanians. The petition achieved its object in as much as the Rumanian Government voluntarily withdrew the order.

Finally, all over eastern Europe, but especially in Poland and Rumania, the year was notable for recurrent manifestations of anti-Semitism. (D. S.)

**Minor League Baseball:** *see* BASEBALL: *The Minor Leagues.*

**Miquelon:** *see* ST. PIERRE AND MIQUELON.

**Missions:** *see* FOREIGN MISSIONS.

**Mississippi,** admitted as a State in 1817; popularly known as the "Bayou State"; area, 46,810 sq.mi.; population (U.S. census, 1930), 2,009,821; (estimate July 1, 1937), 2,023,000. Capital, Jackson, 48,282, largest city in the State. Of the State's population in 1930, 340,964 were urban, or 16.9%; 1,000,103 whites; 1,009,718 coloured; 1,999,429 native born; 145 foreign born.

**History.**—The State of Mississippi votes solidly the Democratic ticket. For the period 1936 to 1940 the principal officers of the State are governor, Hugh L. White; lieutenant-governor, B. Snider; secretary of State, Walker Wood; attorney general,



HUGH L. WHITE, governor of Mississippi

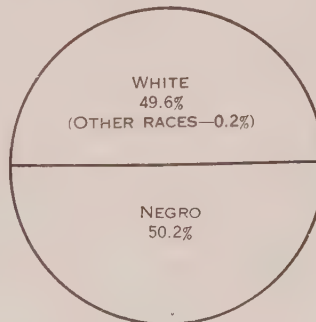
Greek L. Rice; State tax collector, James B. Gully; State treasurer, Newton James; superintendent of education, J. S. Vandiver; presiding officer of the State senate, Lieutenant-Governor J. B. Snider; presiding officer of the house of representatives of the State, Fielding L. Wright. The State senate has 49 members in addition to the presiding officer, the lieutenant-governor. The house of representatives has 139 members. In the membership of the State legislature farmers predominate with a total of 89 in the two houses; lawyers, 51; teachers, 45; merchants, 14; insurance agents, 12; with 22 other occupations represented in the membership with from nine to two members. All members of the legislature are members of the Democratic Party.

The State is comprised of 82 counties and each county is divided into five supervisors' districts or "beats." The units of local government for practically all purposes of the State are the counties and the supervisors' districts. The term of all State and county officers is four years, there being only one exception and that the eight-year terms for which the six members of the State Supreme Court are elected.

**Education.**—The State maintains two systems of public schools, one for whites and one for coloured, as required by the constitution. Consolidation of rural schools has been very extensive in the past decade, the rural schools of all 82 counties of the State having been to some extent consolidated. In some instances as many as 50 small schools have been consolidated into five rural consolidated schools for the county, that is, one to each supervisor's district. The county is the public school unit.

The State maintains a system of higher education in which is found the University of Mississippi, at Oxford; Mississippi State college, at Starkville; Mississippi State college for women, at Columbus; Mississippi State teachers' college, at Hattiesburg; Delta State teachers' college, at Cleveland; and Alcorn agricultural and mechanical college, for negroes, at Rodney. All six of these institutions, the senior colleges of the State, are under the jurisdiction of a single board of trustees, with the governor as president of the board and a chairman of the board who is selected by the membership of the board. Ten boards and commissions, created under authority of law, give attention to public welfare activities.

**Banking.**—There are in the State 223 State banks, including 40 branch banks, and 26 national banks, including one branch bank. Bank resources stood at \$188,264,000 on June 30, 1936 with deposits at \$141,184,000.



MISSISSIPPI: Composition of population

**Agriculture, Manufactures, and Mining.**—Agriculture provided direct employment for 66.8% of the State's total population. Sixty-six per cent of the total land area of the State is used for agricultural purposes, there being 311,683 farms covering 19,655,413 ac. in 1935 with a crop output of



\$114,327,000, of which \$89,883,000 was cotton and \$14,797,000 was cottonseed.

Manufacturing in recent years has developed very rapidly, particularly manufacturing having to do with the use of cotton and the use of wood products. The output of 1,062 concerns in 1935 was valued at \$121,931,115. The State has great potential mineral resources, including clay products, oil and gas, cement, sand and gravel, glass sands, lime, building stone, and miscellaneous minerals. Production in 1935 (largely natural gas) was valued at \$3,092,609. (A. B. Bu.)

**Mississippi River System.** The Mississippi river rises in Lake Itasca, Minn., and flows in a general southerly direction 2,434 miles to the Gulf of Mexico. From Cape Girardeau, above Cairo, to the Gulf of Mexico, the river flows through the fertile lands of an alluvial plain, about 50 miles wide and 600 miles in length. Without levees, some 20,000,000 acres are subject to overflow by river floods which occur late in the crop season. The principal tributaries of the Mississippi are the Ohio, entering the river at Cairo, Ill.; the Missouri, entering above St. Louis, Mo.; the Arkansas and the White, entering the lower Mississippi above Arkansas City, Ark.; and the Red, which connects with the lower river in the vicinity of Angola, La. The basins of these tributaries, with that of the upper Mississippi, are the chief sources of flood waters of the lower Mississippi. The entire area drained by the system is about 1,240,000 square miles, equal to one-third the area of the United States.

*Divisions of the Mississippi Basin*

Designation	Area in square miles	Ratio to entire basin
Lower Mississippi basin . . . . .	69,000	0.06
Red River basin . . . . .	90,000	0.07
Arkansas basin . . . . .	186,300	0.15
Missouri basin . . . . .	527,100	0.43
Upper Mississippi basin . . . . .	165,900	0.13
Ohio basin . . . . .	201,700	0.16
Total . . . . .	1,240,000	1.00

**The Lower Mississippi.**—Works for the improvement of the channel have been executed at various places below Cairo and levees built for flood control from Rock Island, Ill., to near Head of Passes, La., 484 miles above to 1,070 miles below Cairo. Effective revetment below Cairo is now in place on 144 miles of river bank; and 35 miles of permeable dikes, with 10 miles of sand dikes for channel regulation, are complete. The 2,934-mile levee system, with earthwork aggregating 996,616,383 cu.yd., protects a total of 27,850 sq.mi. of land against maximum known floods. During 1937 there were 37,295,000 cu.yd. of material placed in the levees. The Bonnet Carre spillway structure, completed February 10, 1931, was operated for the first time during the flood season of 1937. The Birds Point-New Madrid Floodway was also brought into successful operation during the emergency. A navigable channel nine feet deep and 300 feet wide for a distance of 741 miles below Cairo, and a depth of not less than 35ft., several hundred feet wide, for the remaining 240 miles to the Gulf of Mexico is available.

**Basins of the Red and Arkansas Rivers.**—Six locks and dams on the Ouachita and Black rivers provide a depth of 6½ ft. at low water, a distance of 351 miles from the Red river to Camden, Ark. In addition, the principal streams are improved throughout a total length of more than 1,000 miles.

**Missouri River Basin.**—Although improvement of the Missouri river to date has secured 6-ft. navigation from the Mississippi to Kansas City and lesser depths upstream, the storage available

in the future from the Fort Peck reservoir is expected to furnish a desirable increase. The Fort Peck dam and reservoir are under construction with the main purpose of establishing 8- to 9-ft. navigation below Sioux City, Ia. The site of the dam is on the Missouri river, 11 miles above the confluence of Milk river, in Montana. The project stands 71% complete at the end of this fiscal year. The reservoir when complete will have a maximum storage capacity of 19,412,000 acre feet. The project will contribute an important share of protection in the control of flood waters.

**The Upper Mississippi.**—Below Alton, Ill., 9-foot channel depth is maintained by open river works. Above this point for the purpose of securing similar navigation depths, a system of low-head dams and locks is in process of construction. When complete, there will be 26 of these structures with a total lift of 331.3 ft. at low water in the 650 miles of river between Alton, Ill., and Minneapolis, Minn. Locks and dams Nos. 7 and 8 were opened to navigation this year. The 9-ft. canalization project, as a whole, is 67% complete, the extension authorized this year for the 9-ft. channel above St. Anthony falls, Minneapolis, not being included.

**The Ohio River Basin.**—The Ohio river has a total length of 981 miles. All of the structures of a nearly completed system of 47 locks and dams designed so as to have no adverse effect on flood control are in operation, thereby providing 9-ft. navigation throughout the length of the river. The fixed dam now under construction at Gallipolis, Ohio, will replace 3 existing dams.

**Flood Control.**—The general Flood Control Act of June 22, 1936, establishes, for the first time in the history of the Federal Government, a definite flood control policy which provides for Federal participation in the construction of economically justified projects in co-operation with States, political subdivisions thereof or other local interests. Improvements under construction include the Sardis dam, Yazoo River basin; the Conchas and Fort Supply dams in the Arkansas basin; the Fort Peck dam, on the Missouri river; the Tionesta and Crooked Creek dams in the Allegheny valley; and the Tygart River dam, West Virginia. The Muskingum valley system of 14 flood control reservoirs, situated in southeastern Ohio, is 81% complete.

**Expenditures.**—For the improvement of the Mississippi river and its tributaries, including the work completed during the fiscal year of 1937, a total expenditure of \$1,363,700,000 (£280,221,925) has been made. (See also FLOODS AND FLOOD CONTROL.)

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**Missouri**, popularly known as the "Show Me" State; area 69,420 sq.mi.; population according to the U. S. census of 1930, 3,629,367, estimated July 1, 1937, 3,989,000. Capital, Jefferson City, 21,596. The largest cities (1930) were St. Louis, 821,960, and Kansas City, 399,746. Of the State's population (1930) 1,859,119 were urban, or 51.2%; 3,398,887 whites; 230,480 coloured; 3,476,934 native born; 152,433 foreign born.

**History.**—Missouri, part of the Louisiana Purchase of 1803, became a State in 1821. The present constitution, adopted in 1875, provides for a general assembly, consisting of a Senate of 34 members elected for four years and a House of Representatives of 150 members chosen for two years. Principal executive officers are (1937): governor, Lloyd C. Stark; lieutenant-governor, Frank G. Harris; secretary of State, Dwight H. Brown; State auditor, Forrest Smith; State treasurer, R. W. Winn; attorney-general, Roy McKittrick; State superintendent of schools, Lloyd W. King. The judicial system consists of a Supreme Court, three Courts of Appeals, and 38 Circuit Courts.



Missouri's representation in Congress consists of two Democratic Senators (Bennett Champ Clark and Harry S. Truman) and 12 Democrats and one Republican in the House of Representatives. The presidential popular vote in 1936 was Roosevelt 1,111,043, Landon 697,891; none of the third parties polling as many as 15,000 votes. The vote for governor was Stark (Democrat) 1,037,133 and Barrett (Republican) 772,934. In the same election the voters defeated a State constitutional amendment to increase the pay of State legislators, but adopted amendments permitting the pensioning of firemen and school teachers and creating a State conservation commission to supervise wild-life restoration. The 1937 general assembly substituted lethal gas for hanging in capital crimes, prohibited the sale of goods manufactured by child labour, and increased the retail sales tax from one to two per cent.

**Education.**—The public school system consists of the University of Missouri at Columbia, five teachers colleges, a school of mines, Lincoln university for Negroes, 8,047 rural schools and 962 high school districts. Washington university and St. Louis university at St. Louis are the largest advanced private colleges in the State. In the school year 1935-36 there were 525,506 pupils and 18,009 teachers in the elementary schools and 171,735 pupils and 6,835 teachers in the high schools. The five teachers colleges had 12,579 students (1936) and the university 6,907 (1937). Total expenditures for operation of the public schools in 1933-34, \$29,379,927.

**Charities.**—In 1935 Missouri established old-age pensions for indigents past 70, payments not to exceed \$30 per month for individuals and \$45 for couples. Scarcity of revenue and excessive applications for aid have held the payments much lower, the average for Dec. 1937 being \$13.52. The 1937 session of the general assembly created a Social Security Commission to supervise such welfare activities as old-age pensions, child welfare, and relief in cases of public calamity. An Unemployment Compensation Commission was created to supervise an unemployment insurance program based on the pooled fund plan.

**Finance.**—The balance in the State Treasury on Jan. 1, 1936, was \$11,794,268.64; receipts for 1936, \$77,740,222.59; disbursements 1936, \$68,946,980.12; balance in State Treasury Jan. 1, 1937, \$20,587,511.11. The total bonded State debt on Dec. 31, 1937, was \$116,621,000. Expenditure for relief in 1937 was \$3,601,629.37. The assessed valuation of property in 1936 was \$3,795,634,668.

**Agriculture, Manufactures, Mineral Production.**—In 1936 Missouri had 198,709 farms with a total acreage of 35,053,297, of which 13,141,500 ac. were devoted to crops and 15,174,618 to pasture. The 1936 total value of farm crops was \$176,173,000, of which corn, cotton, oats, tame hay, and winter wheat made up 77.5%. In 1937 Missouri ranked 5th among the States in corn and oats, 8th in wheat, and 12th in tame hay and cotton. Total value of livestock in 1936 was \$259,545,300, making a total farm production of \$435,718,300. Cattle, sheep, horses, mules, and hogs make up the bulk of livestock production.

In the 1930 census Missouri ranked 10th among the States in



LLOYD C. STARK, governor of Missouri

manufacturing on the basis of number of establishments, 11th in value of products, and 13th in number of wage-earners. The State Department of Labor and Industrial Inspection report for the year ending Dec. 31, 1936, lists 4,406 manufacturing plants, 244,557 wage-earners drawing \$396,312,527, and an output of \$1,560,734,496. Motor vehicles, slaughtering and meat-packing, boots and shoes are important industries.

Missouri ranks between 10th and 15th among the States in mineral resources. Mineral production for 1935 was valued at \$35,800,213. The Bureau of Mines summary for 1935 indicates the chief minerals worked as:

Product	Amount	Value
Lead	97,493 tons	\$7,799,440
Coal	3,645,996 tons	6,924,000
Cement	3,291,332 bbls.	4,940,713
Stone	2,263,350 tons	2,695,352
Sand and Gravel	3,109,104 tons	1,889,787
Lime	312,462 tons	1,759,918

Missouri led the United States in lead production during 1936 with 110,428 tons out of a total of 373,986. (L. E. A.)

**Missouri River:** see MISSISSIPPI RIVER SYSTEM.

**Mohammedanism:** see ISLAM.

**Mola, General Emilio** (1887-1937), commander of the Northern Army and second in command to General Franco of the Insurgent forces in the Spanish Civil War, was killed in an aeroplane crash while flying over the northern front on June 3, 1937. General Mola was born in Cuba in 1887 and spent all his life in the army. In 1926 he was made chief of the colonial forces in Morocco and in 1931 was summoned to be Director-General of the Police of Spain. He soon resigned, however, due to the excitement following police firing upon a student demonstration. In 1935 a Rightist government returned him to his Moroccan post, but he was again dismissed in 1936 by a Leftist government. He was in virtual exile until he led the Insurgent troops into Spain from Morocco with General Franco.

**Molotov, Vyacheslav Mikhailovich** (1889- ), president of the Soviet Union Council of People's Commissars since 1930, and a member of the Politbureau (in which the real power resides), was born at Kazan, became a member of the Communist party in 1906, and by 1909 had been arrested and exiled. After much work as a Bolshevik journalist he played a prominent part in the October revolution, 1917, and became closely associated with Lenin; from 1920 to 1921 he was secretary of the Central Committee of the Party in the Ukraine, and from 1922 that of the same organ of the U.S.S.R., which holds complete legislative and executive power when the All Union Congress is not in session. Since holding high office, M. Molotov has always ranged himself on the side of moderation, and has been particularly vocal on behalf of international peace; it was he also who, in 1935, proposed, as the spokesman of the Council, the remodelling of the Constitution that came into effect at the close of 1937.

**Molybdenum.** The United States is the foremost producer of molybdenum, with about 80% of the world's recorded production to date, and a current output of about 88% of the total. Australia, Chosen, Japan, Spain and Sweden have contributed in the past, but are no longer active; Norway has long been a producer, but contributes only 4% of the current output, while Mexico, which first produced in 1932, now supplies 6%; Morocco, beginning in 1933, now adds another 1%, and various smaller producers the same amount, making a total of 8,800 metric



tons in 1936. An output of 2,200 tons in 1929 declined to 1,280 tons in 1932, but new developments in the applications of molybdenum in alloy steels and cast iron have resulted in a demand which has increased the 1932 low by nearly seven fold in four years. (See also MACHINERY AND MACHINE TOOLS.)

(G. A. Ro.)

**Monaco.** A small principality on the Mediterranean; area, c. 8 sq.mi.; population (1933) 22,153, of whom 1,750 were native Monacans. Its towns are Condamine (10,700), Monte Carlo (9,430), and Monaco (2,020).

Elections took place in July 1937. Lists of candidates presented by the Union Démocratique party, presided over by the mayor of Monaco, were elected in their entirety.

M. Émile Roblot, honorary prefect, was nominated on July 16, 1937, by His Highness the Prince of Monaco (Louis II; b. 1870; succeeded 1922) to succeed M. Bouilloux-Lafont in his duties as minister of State of the principality, that is to say, head of the government of Monaco.

**Monetary Units of Leading Countries:** see EXCHANGE RATES.

**Money, Purchasing Power of:** see PURCHASING POWER OF MONEY.

**Mongolia** (INNER AND OUTER), is a vast sparsely populated tableland occupying about 1,000,000 sq.mi. in North-eastern Asia. It is bounded on the north by Siberia, on the west by Chinese Turkestan, on the east by Manchoukuo, on the south by China Proper. Of the two component parts of Mongolia, Outer Mongolia (622,744 sq.mi.) is greater in extent; but Inner Mongolia (334,100 sq.mi.), understanding by that term the three Chinese provinces of Chahar, Suiyuan and Ningsia, is more thickly populated. The population of Outer Mongolia is usually estimated at 750,000-800,000, while there are about 1,500,000 Mongols in Inner Mongolia. Mongols constitute the majority of the population in those provinces of Manchoukuo which lie west of the Hsingan mountains and in the Soviet Republic of Buriat-Mongolia and some of them are to be found in Chinese Turkestan. They are mostly a nomadic and pastoral people, although in regions where they have mixed with the Chinese they show some tendency to adopt a settled agricultural life. Their unit of social organization is the tribe, or banner. Lamaism, a somewhat corrupted form of Buddhism, is the dominant religion; and Lamas, or priests, constitute a considerable part of the population. Most of the Lamas are attached to lamaseries, temples or monasteries which are among the largest Mongol communities. Although the peoples of Inner and Outer Mongolia are similar in race, language and habits, these two regions are separated by a long stretch of the Gobi desert and for almost two decades have been under quite different political influences. The history of the two should, therefore, be considered separately.

**History: Inner Mongolia.**—A feature of life in Inner Mongolia has been the rapid development of Chinese colonization, especially along the line of the Peiping-Suiyuan Railway. This led to much friction between the Chinese agriculturists, who wished to settle on the land, and the nomadic Mongols, who desired to keep large open spaces for the pasturing of their flocks and herds. There were occasional Mongol riots and revolts; but the Chinese officials, on the whole, maintained the upper hand until a new factor entered into the situation as a result of the creation of Manchoukuo. Japanese military influence began to spread from Manchoukuo into Inner Mongolia and the Japanese were quick to take advantage of the antagonism between the Mongols and the Chinese.

A so-called Mongolian Autonomous Political Council, with headquarters in Pailingmiao, came into existence under the leadership of Prince Teh, a Chahar Mongol. Prince Teh's policy was to hold the balance between Japan and China, endeavouring to obtain the maximum degree of Mongolian autonomy; but his hand was largely forced by the sweeping Japanese advance into North China in the summer of 1937. The Japanese had already obtained an adherent in Li Shou-hsin, a Manchoukuo Mongol who commanded an irregular force which had taken over several counties of Chahar in the winter of 1935-36. Mongol cavalry co-operated with the Japanese in their advance to Paotow, railhead of the Peiping-Suiyuan Railway. At the end of October an Autonomous Government of Mongolia was formed, headed by Prince Yun, a leader of the Suiyuan Mongols, with Prince Teh as vice-chief of State. The territory of the new State provisionally includes Suiyuan, and the northern part of Chahar. It is provided with Japanese military and political advisers.

**History: Outer Mongolia.**—The Republic of Outer Mongolia came into existence as a result of the invasion of this region by Soviet troops waging war against the White leader, Baron Ungern-Sternberg, who had made Outer Mongolia a base of operations. With this Soviet aid a group of Mongolian revolutionaries established themselves in power; and since 1921, when the so-called People's Revolutionary Government was established in Urga (now renamed Ulan Bator), the capital of Outer Mongolia, that territory has been in very close relations with the Soviet Union. Non-Soviet foreigners have been entirely barred from the country for the last few years and almost all recent information about it is based on Soviet sources. The régime in Outer Mongolia has been closely patterned on Soviet models, although with some allowance for the primitive economy and religious prejudices of the country. A pact providing for mutual assistance in the event of invasion was signed by the Soviet and Outer Mongolian Governments at Ulan Bator on March 12, 1936.

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**Montana,** a State of the North-western United States popularly known as the "Treasure State"; area 146,572 sq.mi. making it the third largest State in the Union; population according to the U.S. census of 1930, 537,606, estimated by the Census Bureau July 1, 1937, 539,000. Capital, Helena, 11,800 which is fifth city in size in the State. Larger cities are Butte, 40,000, Great Falls, 29,000, Billings, 18,000 and Missoula, 15,000. Of the State's population in 1930, 181,036 or about 33% were urban; 517,327 were whites of whom 444,366 were native born; 14,798 were Indians. There were 216,479 gainful workers in 1930 of whom 79,518 were engaged in agriculture, 14,952 in mining, and 33,618 in manufacturing.

**History.**—What is now Montana was included in the territory of Idaho created in 1863. Montana territory was organized in 1864. The territorial period was dominated by mining, first of gold, then of silver, followed by copper which continues important to the present time. In 1889, Montana was admitted as a State. The Constitution which with amendments remains in force today is lengthy and contains much specific legislation. The amendments are mostly legislative rather than constitutional in character. The executive department is divided between several offices and administration in practice is handled by *ex officio* boards. Roy E. Ayers was elected governor in 1936, Sam Mitchell, secretary of State, and Harrison Freeborn, attorney-general. A law of 1937 has tended to centralize executive power in the governor. Legislative apportionment is based on counties, and this gives an



advantage to rural communities. The Populist movement with its demand for free silver was strong in the '90s. Recently, organized labour and the farmers' union have controlled the legislature.

**Education.**—The public school system has about 80,000 children enrolled in the grades, 27,000 in high school, and 4,000 in the six branches of the university. There are two other institutions of college grade in the State.

**Charities.**—Charities and relief are administered almost entirely by the State Board of Public Welfare and by Federal agencies. The State maintains institutions for orphans, blind, deaf, dumb, insane and for the tubercular. It also has reform schools for boys and girls, and a State penitentiary.

**Finance.**—The public debt of the State is \$14,000,000. The gross annual expenditures of State and subdivisions amount to \$40,000,000. State taxes are largely indirect, property taxes go to the counties.

**Agriculture, Mining, Manufacturing.**—Agriculture is the most important industry. Wheat production for 1937 was 27,000,000 bu., sugar beets 10,000,000 tons. There are 1,200,000 cattle in the State and 3,000,000 sheep. Mining statistics for 1935 reveal a total product valued at \$52,096,553 led by 154,957,470 lbs. of copper at \$12,861,470. Other minerals valued at over \$4,000,000 were silver, petroleum, natural gas, gold, zinc, and coal. Manufactures are largely milling, lumber, and smelting and had products valued at \$124,778,215 in 1935. The chief public problem is water conservation and irrigation.

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**Monte Carlo:** see MONACO.

**Montreal,** in the Province of Quebec, Canada, is situated on an island at the confluence of the Ottawa and St. Lawrence rivers, approximately 1,000 mi. from the Atlantic ocean and 2,760 mi. from Liverpool. It is at the head of ocean navigation and the terminus of lake vessels. It is served by three canal systems, the St. Lawrence canals, 1,230 mi. to the Great Lakes, the Eastern United States canals, via the Richelieu river and Lake Champlain, 127 mi., and the Ottawa river canals, 119 miles. The head offices of the Canadian Pacific railway and of the Canadian National railways are situated at Montreal.

Population of the city of Montreal (Federal census, 1931), 160,925, and of greater Montreal, including its suburbs, 973,637. In 1936, as estimated by Lovell's *Directory*, the population was: city of Montreal 1,233,623, greater Montreal 1,406,596. Greater Montreal is governed by a Metropolitan commission, the majority of whose members are appointed by the city council of Montreal. The city council consists of 35 aldermen, of whom 5, selected by the council, comprise the executive committee. The mayor is elected by the city as a whole and is not a member of the executive committee.

Control of education is divided between the Catholic School Commission of Montreal and the Montreal Protestant Central School Board. The method of appointing members of the Cath-



ROY E. AYERS, governor of Montana

olic School Commission of Montreal was modified during 1937. A commission has been appointed by the Provincial Government to examine and report on the Protestant school situation.

The port of Montreal is the largest in Canada. The number of sea-going vessel arrivals in 1936 was 2,051. Net registered tonnage was 5,728,293; value of merchandise exported, \$208,605,108; and value of merchandise imported, \$151,608,469. For 1936 the amount of building permits issued stood at \$6,938,943; bank clearings at \$5,386,188,857; and bank deposits at \$10,150,016,770. The assessed value of real estate is \$1,238,995,256. (J. A. MA.)

**Montreux Convention:** see CAPITULATIONS.

**Mooney, Thomas J.:** see CALIFORNIA: *History*.

**More, Paul Elmer** (1864-1937), American critic and author, who in association with the late Irving Babbitt of Harvard university led the movement known as the New Humanism which glorified free-will and sought to re-establish a spirit of intellectual individualism. From 1921-33 he was lecturer in Greek philosophy and the history of Christian thought at Princeton university. His most recent works included *Christ, the Word* (1927), *The Demon of the Absolute* (1928), *The Catholic Faith* (1931), and *The Sceptical Approach to Religion* (1934). His death occurred at Princeton, N. J., March 9, 1937. For further information, see the *Encyclopædia Britannica*, vol. 15, p. 794.

**Mormons** (or LATTER DAY SAINTS). During the whole history of the Church of Jesus Christ of Latter Day Saints its members have been disciplined in the principle that the duty of the Church and its membership is to see that no member suffers from need for the necessities of life. The declared ideal of the Church is to make "every man equal according to his family, according to his circumstances and his wants and needs." Under Church law the first Sunday in every month is a fast day. Members are to give for the support of the Church poor and needy the food (or its price in money) that, not fasting, they would have eaten. Obedient to these principles, the Church has set up a Church Security Plan, to provide the necessities of life for needy members and to rehabilitate civically, morally, and spiritually those who have suffered during the depression. To rebuild thrift and self-respect, all employables receiving aid are to give some service therefore. Compensation paid to persons helped is based not upon a daily wage, but upon the daily need. A man with a family of five receives for his service what his family of five needs; a man without a family, doing the same work, receives only what he himself needs.

Effort is made to put the employables back into the industrial life of the country, both as employees and on their own account. Various work projects are established for the collection or production of food stuffs, clothing, fuel, shelter, for the beautification of Church property, and for the betterment of homes of the employables. Community projects are created and assisted. The second purpose of the plan is worked out by bringing the unemployed into local social and church activities and into the civic and cultural life of communities.

In 1937 there were 1,392 churches with a membership of 678,203; while the reorganized branch of the Church had 575 churches with 99,492 members. (J. R. CL.)

**Morocco.** The present article is concerned with the French zone only of this north-west African country. (See also SPANISH MOROCCO and TANGIER.) The reigning sultan, Sidi Mohammed (succ. 1927), is the nominal ruler, but the zone is effectively governed by the French resident general and com-



mander-in-chief, General Noguès. The area is c. 200,000 sq.mi., and the population 6,296,000. The normal French system of education is operated for both Europeans and natives, but the percentage of native illiterates is high. (X.)

**History.**—When General Noguès took over the position of resident-general in Oct. 1936 from M. Peyrouton, he found Morocco in the midst of a severe economic crisis resulting from the prolonged drought. The region south of the Atlas (the Sous) was particularly affected. Events in Spain naturally had a considerable repercussion in the French zone. The very fact that in a Spain that had been conquered by their ancestors, Moroccans were now fighting against European soldiers created a dangerous precedent.

General Noguès first adopted a series of measures to alleviate the distress of the natives and the pressure upon the small farmers. From Feb. 1937 onwards, reforms made themselves felt. The *Comité d'Action Marocaine* was dissolved (May 18) and several newspapers were suppressed. Nationalist and Communist agitators organized (Sept. 1) disturbances at Meknes, usually a very peaceable town (10 killed). At the end of October, serious disturbances took place at Fez, Casablanca, Marrakesh, and Oujda. Troops occupied the native town of Fez. The principal leaders were arrested and deported. These energetic measures re-established order.

On Oct. 29 there left Port Lyautey for the first time a vessel laden with 1,000 tons of crude oil.

The negotiations entered into with Great Britain for the suppression of the capitulatory régime in Morocco terminated in the agreement of July 29.

**Trade and Communications.**—Agriculture is the chief industry; and the principal minerals are phosphates, lead ore, and manganese. Imports and exports for 1936 were frs. 1,150,502,000 and frs. 781,484,000 respectively. At the end of 1935, there were 4,320mi. of main and secondary roads. About 1,000mi. of railway are in operation or under construction, as well as about 500mi. of narrow-gauge railway.

Estimated revenue and expenditure for 1937 were frs. 870,069,500 and frs. 895,057,570 respectively.

**Defence.**—Apart from the sultan's Black Guard, all military forces are drawn from the French Metropolitan and Colonial armies, chiefly African troops, and part of the Foreign Legion.

(R. PIN.)

**Morrison, Herbert Stanley** (1888— ), British politician, was born in East London, and, after being errand boy, shop assistant, telephone operator, and assistant circulation manager of a newspaper, became secretary of the London Labour party in 1915. In 1920–21 he was mayor of Hackney, and in 1923 entered Parliament as a labour member for South Hackney; he was rejected in 1924, regained the seat 1929, lost it again 1931, and regained it in 1935. He was minister of transport 1929–31, and was made a privy councillor in the latter year. In office he was responsible for many reforms in road traffic regulations, as also for drafting the legislation which resulted in the London Passenger Transport Board. Mr. Morrison's outstanding service to his party, however, has been in the sphere of local government. He was the "organizer of victory" who created the electoral machine by which the Labour party secured control, in 1934, of the London County Council and the majority of the Metropolitan Borough Councils, and improved its position in 1937. He has been an L.C.C. alderman and leader of the Council since 1934. As such he has been closely associated with the scheme for a "green belt" round London, with the decision, after 11 years of controversy, to build a new Waterloo bridge, and with other reforms. Besides numerous

pamphlets, he has written *Socialization and Transport* and *How Greater London is Governed*.

**Morrow, Jay Johnson** (1870–1937), American soldier and administrator, governor of the Panama Canal (1921–24; 1925–29), and American member of the commission which mediated the Tacna-Arica boundary dispute. He was born at Fairview, W. Va., Feb. 20, 1870, and graduated from the U.S. Military Academy in 1891. After serving as instructor in military engineering at West Point, he was sent to the Philippines in 1901 as military governor of the Province of Zamboanga. He was the engineering member of the Board of Commissioners for the District of Columbia from 1907–09 and during the World War was chief engineer of the 1st American Army and deputy chief engineer of the American Expeditionary Forces, attaining the rank of brigadier-general. After the Armistice, he first went to Panama as engineer of maintenance, but retired from the Army in 1922 soon after his appointment as governor. He died at Englewood, N.J., April 16, 1937.

**Moscow.** The capital city of the U.S.S.R. and of the R.S.F.S.R. Pop. (1936) 3,567,900. See *Encyclopædia Britannica* vol. 15, p. 838.

With 600,000 workers, the city forms an important industrial centre. Its chief industries are metallurgy, machine building, textiles, clothing, and printing. Output in 1936 was 12,133 million roubles. There is a railway junction (11 lines) and airport. Of great economic importance for the town was the opening, in July, 1937, of the 128km. long Moscow-Volga canal, through which Moscow became a river port in direct connection with the Caspian, Baltic, and White seas.

In accordance with the Ten Years' Plan of the Soviet Government and Communist Party for the rebuilding of Moscow, adopted in July, 1935, considerable building activity took place in 1937, and the old-world city of the pre-War period became more and more modernized. Since May, 1935, Moscow has possessed an underground railway (Metro), the second section of which, 9½mi. long, was finished in Nov. 1937. A third section is now being built, and is to be opened for traffic in 1939. The number of passengers carried in Moscow by tram, bus, and underground was, in 1936, 2,136.6 millions.

In 1936, Moscow possessed 34 theatres, 65 museums, 79 higher educational institutions with 92,195 students, and 83 technical colleges with 32,097 students; 549,579 children attended elementary and secondary schools. See Sir E. D. Simon and others *Moscow in the Making*, London, 1937. (S. YAK.)

**Mosley, Sir Oswald Ernald**, 6th Bart. (1896— ), British politician; educated at Winchester and Sandhurst; in Parliament 1918–31, as successively, Conservative, Independent, and Socialist; chancellor of the Duchy of Lancaster, 1929–30; left the Labour party 1931, to found the "New party," and later became leader of the British Union of Fascists ("Blackshirts," *q.v.*). On Oct. 9 "the leader" was hit by a stone at an open-air meeting in Liverpool and removed unconscious to hospital. On Dec. 8, his assailant was acquitted on the charge of "wounding with intent to cause grievous bodily harm," but on a second charge of "inflicting grievous bodily harm" the jury disagreed. In Feb. 1938, the prosecution offering no evidence, the defendant was discharged. On Oct. 15 damages totalling £20,000 were awarded to Lord Camrose and the Daily Telegraph, Ltd. against the printers, publishers and editor of *Action*, the organ of Sir Oswald's movement, after a libel action in respect of an allegation that Lord Camrose's family had Jewish connections.





NATIVES FLEEING from the storm in *The Hurricane*, a motion picture of the South Seas realistically produced in Hollywood

**Motion Pictures.** Through 1937 and emerging into 1938 the once self-contained and self-sufficient motion picture institution found itself intimately integrated with the whole pattern of world affairs, and in a world of tangled politics and finance. Over most of the globe the screen had by the close of the year become a concern or instrument of Government. Only in the United States, the British Empire and Scandinavia was the motion picture a substantially free medium of expression. Controls and restrictions in other lands varied from coercive taxation to complete bureaucratic operation as in Soviet Russia.

It was the 50th year since the beginnings of Thomas A. Edison's research resulting in the peep-show kinetoscope which broadcast the seed of the cinema around the world in 1894-95. It was also the 41st year of the picture on the screen, the 25th year of the "feature" or multiple reel drama and the 10th year of film recorded sound and talk.

Most of the complexities of the screen's social and political position revealed by the developments of 1937 were to be considered consequences of the acquisition of the spoken word, raising linguistic barriers, racial and sectional considerations and deeply invading the prior complete internationalism of the art.

The end of 1937 found Mickey Mouse in a Graustarkian snarl in Yugoslavia, suspect of fostering revolution, and at the same time the only American screen figure welcomed on the State-ruled screens of Russia. Little Shirley Temple, première box-office star of the world screen, was barred in Germany as a baleful influence on the young. Miss Gracie Fields, Britain's foremost star and comedienne, was honoured by the award of the Order of the British Empire. Original versions of American pictures were permitted in but one theatre of 200 seats in Italy, and in France in five theatres in Paris and five in the provinces. All other showings required "dubbed" versions, bearing sound tracks in the native languages. In Italy all pictures in anywise to be deemed favourable to Great Britain were barred. In France the Russian Soviet product, previously barred, was admitted by the Popular Front Government.

An annual poll of theatres in the United States, Canada and Great Britain, conducted by *Motion Picture Herald*, found showmen of the English-speaking world listing the following as preferred by their audiences: Shirley Temple, first; Clark Gable, second; Robert Taylor and William Powell, third; Gary Cooper,

fourth; Gracie Fields, fifth; Bing Crosby, sixth; Fred Astaire, Ginger Rogers and Georgie Formby, seventh; Jane Withers, eighth; Jeanette MacDonald, ninth; and Sonja Henie, tenth.

Of this list three were British: Jane Withers employed in Hollywood; Miss Fields, also under contract with Twentieth Century-Fox Film Company in Hollywood, but, as was Mr. Formby, elected in this list for work in British pictures. Miss Henie, who came to fame in Hollywood, is a Norwegian.

Viewed in the large, the world map presented a picture of efforts against dominance of the screen by the American industry and its production community of Hollywood. This dominance was entirely commercial in character and a consequence of the World War overseas. Internal issues in many, or most, countries became manifest as exhibitors and theatre interests struggled against nationalistic restrictions to maintain for their screens a flow of the American product to which their box office customers had been conditioned. Meanwhile indigenous producers in every land demanded walls against Hollywood in terms of tariffs, quotas and subsidy. The American industry, ever more international than national in operation and outlook, redoubled its efforts at acquiring and concentrating in Hollywood the most conspicuously important talent of every important national and racial area. In sequel the early days of 1938 found several Governments considering prohibitions against exodus of native stars.

Marked extensions of the use of the screen beyond the confines of amusement were to be observed, notably in advertising and related activities of general industry. Also gestures, promising potential progress, were made toward advancing the use of the screen in formal education. Largely extended use of the sub-standard films, 8mm. and 16mm., due in part to technical improvements in cameras, projectors and sensitive materials, and reduction in costs, became conspicuous in what is commonly designated as the "non-theatrical" field. The 16mm. film which was originally designed for service of the amateur and home audiences was becoming more the servant of industry, while the less expensive tiny 8mm., at first a toy novelty, acquired both capacity



THIS AEROPLANE MOTOR created the violent gale in the scene shown above

and status with an apparent destiny of occupying the home market and the attention of an increasing number of amateurs. Another factor of influence was the increasing availability of libraries of projection prints, presenting subjects especially produced for the markets involved and others at last made available from the accumulations of past releases of the dramatic producers. These developments were the more marked in the United States and in the British Empire. In continental Europe, the 9½mm. film developed and widely introduced by Pathe Freres some years before the advent of sub-standard pictures elsewhere, continued to



dominate the popular and non-theatrical markets, purveying kindred material.

The rising importance and application of the 16mm. film in the United States began toward the end of the year to invade lesser theatres devoted to the showing of standard films and thereby suggesting developments of almost revolutionary significance in the field of established exhibition. This 16mm. entry was gained by reason of its ready utility in the production of local newsreels and topical records, used to supplement programs of pretentious studio drama. It was found that for audiences up to perhaps six hundred persons the image from a 16mm. print could be satisfactorily projected, and that production of simple records of local events was readily within the capacity of ordinary amateur cinematography.

Potentially more important possibilities were introduced by this development, foremost among them the prospect that a new type of small theatre served exclusively by the inexpensive, non-inflammable 16mm. films, and requiring little in the way of projection room attention by skilled operators, might arise to compete with the lesser houses of the standard films in the hinterlands and marginal districts, a market including several thousand theatres in the United States and Canada alone, and with further prospects in communities not now served by the theatres. This was further indicated by the success of a number of small but successful "road show" projects involving the use of 16mm. films carried into remote regions with all equipment for exhibition in light inexpensive motor cars. Continued improvements of sound apparatus gave 16mm. films a recording and reproduction quality comparing favourably with the standards of the pretentiously produced material of the big theatres.

The external manifestations of the medium and disseminations of the technology of picture making and distribution, however, gained scant attention from the established art and industry. The movie industry was and is too completely concerned with its endeavours at maintenance of the status quo and the meeting of continuously obtruding problems of the trade, to give heed to manifestations any more remote than tomorrow.

Less obvious, and in fact apparent to a relatively few intimate observers, was the reluctance of a coterie of the builders of the modern industry to relate themselves to today's great corporations as the officers and servants of those corporations and their stockholders rather than as in the manner of the earlier day when they were masters and substantially sole owners. A consequence is much litigation, many claims, some receiverships and smouldering recurrent conflicts with that sector which the picture industry parlance calls "the bankers." The conflicts in this category of relations also derive impetus from the fact that the motion picture, unlike most extensive industries, is an art and industry of personalities and consequently other factors are insignificant. The loss or acquisition of a handful of names, either in screen figures or executives can affect many millions of dollars and determine the destiny of imposing enterprises. This explains in part many of the extraordinary salaries and bonuses paid to motion picture executives, several of them in the vicinity of \$500,000 a year. The year 1937 saw none of those salaries diminished and some of them increased.

The most important aspect of the international situation was the negotiation for future motion picture trade relations between the United States and Great Britain after the impending expiration in 1938 of the ten year Cinema Films Act of Britain with its rising scale quota. Trade and Parliamentary discussions were extensive. There was however a prospect that legislation might be supplanted by special terms of a general trade treaty between the nations. The terms of the final period of the Act required an exhibition quota of not less than 20% all-British product, a

provision opposed by American interests and a majority of British exhibitors, and supported by British producers and affiliated interests. Meanwhile, in recognition of the motion picture's value of indirect promotion of American trade, the industry was enjoying a friendly attitude in the State Department.

As 1938 dawned a decided majority of the American motion picture concerns were in apparently sound condition. Of the half score of major corporate groups, three were conspicuously prosperous, several others in healthy condition and a remaining three representing probably nearly 30% of the invested capital of the industry, were in varying degrees of difficulty, chiefly internal and representing heritages of the market debacle of 1929 and its sequel depression. Box office business at the theatres, however, continued to promise support sufficient for conservative production operations.

Meanwhile in the production community of Hollywood there was difficulty in many quarters in arriving at an understanding of what might be considered conservative endeavour, in the face of spectacular evolutions affecting the orders of picture making. Two elements conspired to make picture production tremendously more costly. First was the upturn in commodity and labour prices together with a complete unionization of all departments of picture making, which resulted in a direct increase of 30% in costs. Second, and even more expensive, was the establishment of a new level of super-production, a demand for a flow of pictures of a pretentious order without precedent. This advance became acutely obvious by early summer, when Adolph Zukor, in charge of production for Paramount Pictures Corporation, observed: "The pictures that we must make to satisfy the public today represent as big a step upward and forward as the feature picture did in comparison with the short product of the old nickelodeon programs." Not long after, Mr. Zukor announced the budgeting of a production program to include some 20 pictures at about \$1,000,000 each. Meanwhile the world market in the concluding months of the year saw the release of several pictures costing over \$2,000,000, most conspicuously the production of the Napoleonic drama, *Conquest*, variously reported as costing between \$3,600,000 and \$3,800,000. This cost however, it was pointed out, was to be considered as extraordinary in that some of the unusual and unanticipated delays and costs of production were in consequence of the death of the late Irving Thalberg, under whose administration the project was started. Incidentally the high cost of talent of top rank was exemplified in this picture with the reported payment of \$365,000 to Charles Boyer for his rôle of Napoleon, a figure however surpassed conspicuously by an earlier and even more pretentious Thalberg production, *The Good Earth*, in which Paul Muni is said to have received a total of \$407,000 salary.

The remarkable rise in cost of the upper rank of pictures in 1937 was in part a consequence of developments of the depression years. In endeavours to lure the impoverished, bargain hunting public of the United States to the box office, theatres widely adopted the "double bill policy" which meant offering two picture dramas on a program for a single admission. As a result, the demand of showmen was for a premier feature to headline the show and a less costly picture to complete the program. In the beginning both pictures came from the same flow of production. The successful or "hit" pictures became known as "A" pictures and the less successful fillers of the program were classified as "B" products. "A" pictures drew rental prices on their merits, while "B" pictures, regardless of cost, were bought at "filler" prices. Very shortly Hollywood began making "A" and "B" pictures by deliberate planning. The "A" pictures received every attention at any cost, while "B" pictures were more and more cheaply made. Competition for the talent, in all departments, to make "A" pictures became more and more hectic, while the incidental "B" pictures fell into



MARLENE DIETRICH and ROBERT DONAT in *Knight without Armor* (right)



BILLY AND BOBBY MAUCH. A scene from *The Prince and the Pauper* (above)

*The Plainsman*, with GARY COOPER and JEAN ARTHUR (right)



PAUL MUNI and LUISE RAINER in *The Good Earth* (right). Miss Rainer won the 1937 Academy Award for her work in this picture



SPENCER TRACY, LIONEL BARRYMORE and FREDDIE BARTHOLOMEW in the motion picture dramatization of Kipling's *Captains Courageous* (lower right). Tracy won the 1937 Academy Award for his work in this picture



SONJA HENIE, world's figure-skating champion, and DON AMECHE in *One in a Million* (above)





lower and lower estate. The early councils of 1938 in Hollywood were concerned with restricting budgets.

The American industry faced internal problems in relating itself to radio broadcasting with advertising sponsors drawing heavily upon Hollywood talent. Two concerns, Metro-Goldwyn-Mayer and Warner Brothers made studio contracts, tending to supplant individual star deals with the radio. Other problems were the movement of independent exhibitors to bring about State legislation addressed at divorcing exhibition from production and distribution, an attack on the distributor-owned circuits of theatres, at which something more than 60% of box office admissions are collected in the United States. In one State, North Dakota, the "divorce bill" was enacted into law and was in the process of test in the courts.

Perhaps the most internationally important picture of the year was Herbert Wilcox's British-made *Victoria the Great* starring Anna Neagle. By special sanctions of the Crown and Government access was had by the producer to sources, material and locations, which gave the picture an extraordinary authenticity and documentary quality, superimposed upon its drama.

Japan through 1937 consolidated plans for screen domination of the Orient. All films for Manchoukuo were handled through a Government trust, and early in the autumn an embargo until Jan. 1 on all importation of films, except newsreels under special permit, was put in effect for Japan. In December the embargo was extended to April, 1938, and a commission was sent to the United States to set up arrangements for a special Government-controlled organization to buy all pictures in the American market for Japanese exhibition.

The Argentine was conspicuous among South American States in promoting an indigenous industry by national legislation. Native production vastly increased in India, with increasing difficulties for the American industry. In Mexico, the American industry faced rising native production and feared expropriation by the Leftist Government. (See also ADVERTISING: *Advertising Mediums*; PHOTOGRAPHY: *Motion Pictures*.)

(T. RA.)

**Motor-Boat Racing** witnessed one of its most active seasons in many years in the United States, while in Europe several successful assaults on former speed records succeeded in lifting previous figures to well above their former levels.

The most noteworthy speed achievement was that made by Sir Malcolm Campbell in "Bluebird" when, on Sept. 1, 1937, he set a record of 129.5 statute m.p.h. on Lake Maggiore, bettering the former record of 124.96 m.p.h. held by Gar Wood with "Miss America X" since Oct. 20, 1932. "Bluebird," designed by Fred Cooper, is 23ft. in designed length and is powered with a V-12 Rolls Royce aero motor of 36 litres piston displacement, delivering between 2,000 and 2,500 horsepower. The two runs on

"NOTRE DAME," owned by Herbert Mendelsohn, winning the oldest speed-boat trophy, the Gold Cup, at Detroit

which the record is based were, outward 130.43, and return against the wind, 128.57 statute miles per hour.

On the Seine, in Paris, a French team headed by Jean Dupuy won the Spreckels International Trophy for outboard drive boats for the third time in succession, covering in the two-hour limit, over a short course, 155.566km. (97.3mi.) or an average of 48.6 miles per hour.

In the United States, the race for the Gold Cup, oldest and most cherished speed-boat trophy, saw a field of ten starters in Detroit, including two Italian and one French entry. The winner was Herbert Mendelsohn's "Notre Dame," driven by Clell Perry, which averaged 63.675 statute m.p.h. for the three heats and made 68.645m.p.h. on her best 30-mile heat. The Italian "Alagi," Captain Theo. Rossi, was second with an average of 62.359m.p.h. for the 90 miles. "Notre Dame" also won the President's Cup on the Potomac, U.S., with "Alagi" again second. At the same meet, on Sept. 27, "Alagi" set a world record for Twelve-Litre hydroplanes in the mile trials of 91.408 statute miles per hour. The results of the season's racing shows that the smaller, lighter boats are going faster than larger ones with more power. (H. L. ST.)

**Motor-Buses.** Recent developments have been directed towards refinements in design rather than towards radical changes.

The oil engine, by reason of its high thermal efficiency, is being adopted in Europe, where the fuel prices are favourable, and to a lesser degree in America, where petroleum costs are low. In Italy economic pressure has stimulated the development of buses consuming producer gas using charcoal as fuel. Producer-gas buses are being operated to a lesser extent in other European countries. Much attention has been paid to the reduction of noise and smoke of the oil engine by extensive research into fuel injection and combustion characteristics. There is a tendency to locate the power plant at the rear or underneath the floor in order to provide increased passenger accommodation.

Several transmission systems are being employed to facilitate gear changing. The epicyclic gear-box with the fluid flywheel is widely used in England, electrically operated epicyclic gear-boxes are popular in France, while in Germany multi-speed servo-operated gear-boxes are in favour. In America electric transmission is used on certain of the larger types; in some cases power is supplied direct to the electric motor by overhead wires in urban areas. On arrival at suburban areas, the wires are disconnected, the engine is started, and the vehicle proceeds under its own power. In the automatic transmission group, the hydraulic torque converter has been fitted to some extent in England, while several other devices are still in the experimental stage.

The servo-assisted hydraulic brake is favoured in England while in other European countries, and in America air brakes are largely in use. The development of braking systems which are automatically self-adjusting is being pursued, and it is likely that this feature will be widely adopted.

High tire mileages are now obtainable, and this has led







R MALCOLM CAMPBELL'S "Bluebird," which made a new world's record 129.5 miles an hour on Lake Maggiore, Locarno, 1937

neral reductions in pressure, with a view to enhancing riding comfort, a feature which has been the subject of much research. Variable rate and independent suspension for the passenger vehicle is still in the experimental stage, but considerable advance has been made in connection with seat design. Absorbent rubber materials are superseding the spring type, while the shape of the cushions is carefully designed to give the passenger adequate support.

Air-conditioning plants are being fitted in certain instances in America, while in England heating and ventilation plants are being installed for long-distance travel.

In bodywork design, both interior and exterior, utility has been the major consideration; elaborate decoration has been avoided, but simple colour schemes and the use of fabric-covered panels have provided an attractive appearance. Fully fronted vehicles are popular, while so-called streamlining has been influencing design. In Germany, where the new roads make higher speeds possible, the wind resistance has been effectively reduced by body treatment. In England, large single-deck buses are being constructed with three axles; one recent design has two steerable front axles. This is resorted to on account of the legislation governing the maximum size and weight allowed on a two-axle vehicle. (See also MOTOR CARS: *Trucks and Buses*; MOTOR TRANSPORTATION.) (A. A. M. D.)

**Motor Cars.** Aside from technical and mechanical improvements in the automobile during 1937, there has been a continuation of certain trends in design, and the introduction of new ones. The significant trend still is, as it has been in the past, the rapid obsolescence of previous models. This is not the result of intentional styling by the designers, but rather the result of continued progress by technicians in a number of industries. This can more easily be seen by what has happened in the automobile in years past. For example, the streamline contours of the automobile are the result of improvement in sheet metal and die design. The high compression ratios which result in larger power outputs in modern engines are largely the result of development of anti-knock motor fuels. High engine speeds are the result of development of light, high strength alloys, satisfactory lubricating methods, and fatigue-resisting bearings. Each improvement in design of the automobile has added to its value, but yet most of these improvements have been unaccompanied by raises in price. Processing and manufacturing methods have not kept step with the improvements in design, and as a result an industry producing a product originally in the luxury class has wandered until it has become a ranking industry in the world. Despite the fact that the automobile industry was hampered by strikes and labour trouble in America, the production for 1937 was still 8% above that in 1936. Truck and passenger car factory output in the United States and Canada amounted to 4,975,000 units, passenger cars making up 4,050,000 of the total. The total

wholesale value of products of the automotive industry in the United States amounted to \$4,177,000,000 for the year. The United States finished the year with a total registration of 29,650,000 vehicles, including trucks and buses. World registration at the end of 1937 was estimated to be 42,400,000 units, of which 70% were registered in the United States. Over 517,000 men were employed in automobile and body plants with a weekly payroll amounting to \$15,500,000. The industry as a whole in the United States represented the largest purchaser of gasoline, rubber, steel, malleable iron, mohair, lubricating oils, plate glass, nickel, and lead. At the same time, the industry provided the railroads with 3,725,000 carloads of freight. There were 46,250 car and truck dealers in the United States and 98,529 repair shops. Retail gasoline outlets number 380,000. England is the largest builder of automobiles in Europe, having one car for each 21 people. In the United States there is one car for each five people, but the concentration is not as great as it is in England. The English have 40 automobiles per sq.mi. while the figure is only nine in the United States.

**Trucks and Buses.**—During the past few years several notable trends have been in evidence, mainly, the cab-over-engine tendency, the introduction of Diesel power plants, styling, specialization load equipment, and driver accommodations. The cab-over-engine development came about in answer to the needs for a shorter wheelbase and better visibility for the driver. Several Diesel engines are already in use and more have been announced for production. Because of the expense of building Diesel engines, these engines have become practical only where the saving in fuel costs is enough to overcome the increase in original investment. Older model trucks were built to carry a number of different kinds of loads, and as a result were handicapped in carrying any particular kind. The more recent models are designed specifically for a certain kind of load and as a result lowered costs are obtained. The possibility of combining advertising with load carrying has led to increased styling in trucks, most models being built with smooth lines and attractive finishes. The sleeper cab type of truck is fairly common in vehicles used for long hauls, while a new cab with room for six passengers has been introduced by one company. British truck builders have shown the same trends as the American companies in addition to the development of an eight-wheel lorry. This type vehicle is of the cab-over-engine design and has four front wheels, both pairs being linked to the steering mechanism.

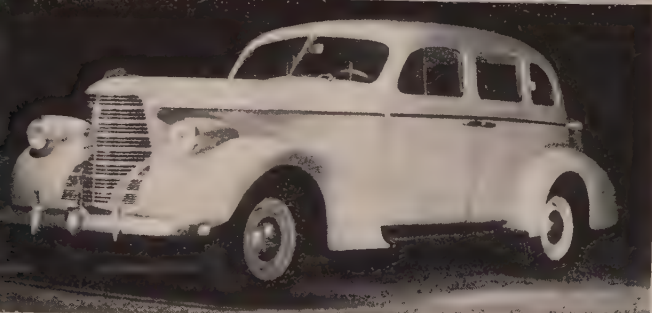
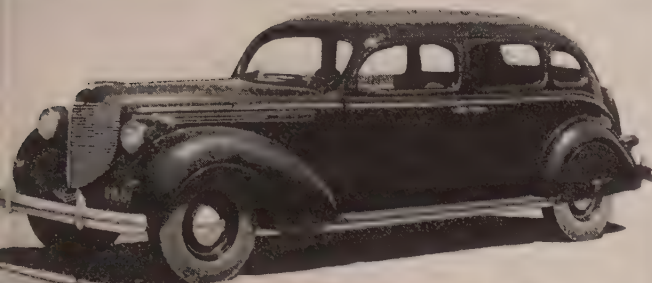
American bus manufacturers have favoured the engine in the rear in the most recent models. This has been done to provide better accessibility for adjustment and service, and also to lighten the driving gear. British bus manufacturers, however, still prefer to locate the power plants in the forward part of the frame.

**Passenger Cars.**—The appearance of the car and the comfort of the passengers both received consideration during 1937. The streamline appearance has been furthered by a smoothing of the lines of the car and by the fairing of external parts of the car









Reading from top to bottom, left column:

FOUR-DOOR FORD SEDAN with 85h.p. or 60h.p. engine

CHRYSLER CUSTOM IMPERIAL with 130h.p. motor and 144-inch wheel base

FOUR-DOOR PLYMOUTH SEDAN

OLDSMOBILE TOURING SEDAN

NASH COUPE with 115h.p. and 125-inch wheel base

DODGE COUPE

STUDEBAKER COUPE

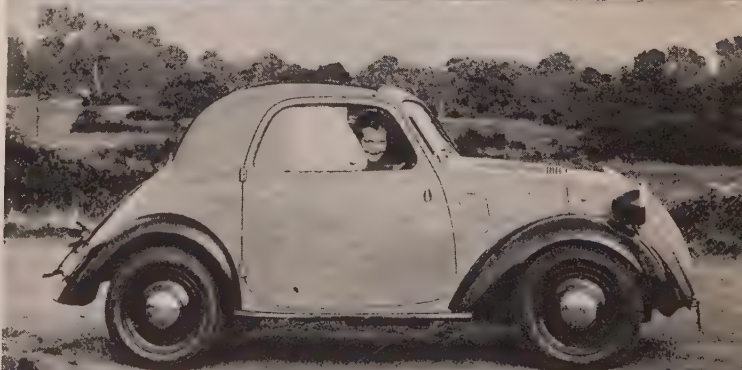
Right column:

TWELVE-CYLINDER FRENCH DELAGE

GERMAN MERCEDES-BENZ SPORTS MODEL

THE TINY FOUR-CYLINDER MOTOR of this Italian FIAT BALILLA is in front of the wheels

AN ITALIAN BUGATTI





**Motor Racing:** see AUTOMOBILE RACING.

**Motor Transportation.** At the close of 1936 there were approximately 40,287,000 motor vehicles on the roads of the world, an increase of some 8% over the previous year. That there has been a further growth during 1937 is certain from figures published at intervals during the year, but as the year progressed there were signs that the rate of increase was slowing down. The United States of America still leads with 70% of all these vehicles. The following table shows the motor vehicles registered in the principal countries in 1936:—

	Passenger vehicles*	Goods vehicles	Total
United States . . . . .	24,219,000	4,002,000	28,221,000
Great Britain . . . . .	1,755,000	514,000	2,269,000
France . . . . .	1,687,000	480,000	2,167,000
Germany . . . . .	1,061,000	309,000	1,370,000
Canada . . . . .	1,041,000	193,000	1,234,000
Australia . . . . .	511,000	179,000	690,000
Italy . . . . .	300,000	115,000	415,000
Soviet Russia . . . . .	56,000	300,000	356,000
Union of South Africa . . . . .	246,000	34,000	280,000

\*Motor bicycles are excluded.

(This table includes all countries with 250,000 motor vehicles or more.)

In relation to population the United States still heads the list with 4.5 persons to a vehicle, followed by New Zealand with 7 persons, and Canada with 9. European countries are headed by France with 19; Great Britain, 21; Denmark, 27; Belgium, 41; Germany, 49; Italy, 103. If motor bicycles were included, Great Britain would show the greatest development.

Per mile of highway, Great Britain with 11.2 vehicles has the highest density. It is followed by Belgium with 10.2; Switzerland with 8.9; United States with 8.6; Holland, 8.5; Germany and France each with 5.2; while Canada has 2.8 vehicles.

In all countries the road motor vehicle is extending its activities, and everywhere it is causing embarrassment to railways. Where railways are State-owned, this may mean financial embarrassment to the State. The consequent destruction of railway capital earning power has been a potent cause of regulation of motor vehicles. The congestion on the roads leading to extended demands for the expenditure of vast sums on new roads and the improvements of existing roads have also caused action to be taken to limit the numbers of vehicles. Further, the competition between haulers by road has often been destructive of efforts to maintain regular services at reasonable charges and caused such a crop of bankruptcies among the operators as to make a demand from them for regulation.

The regulation has taken many forms. In Northern Ireland, for example, it resulted in the establishment of a board to take over all the road services. A similar board was established for the railway, and the two were to endeavour to work for the economic co-ordination of road and rail. So far the Road Transport board has made a substantial loss (£200,000=\$1,000,000), and an enquiry is to be held. In South Africa a large part of the road transport is conducted by the railways, other parties being limited or extended, and similar action is being taken in New Zealand. In Germany, the rates charged for distances of over 50kms. by road must equal certain railway rates. To make the law effective haulers are strictly divided into those who limit the work to a maximum of 50kms., and those who engage only in long distance haulage. The latter must all belong to a State association, and all transactions must be settled through it. This division is obviously uneconomic. In the United States the problem is rendered very difficult by the division between Federal and

States authority, and the wide differences between the action taken by the individual States. The result is that the desired co-ordination between rail and road transport has made little headway. In Great Britain the licensing system has been used to check new entry and hinder expansion of road carriers for hire, and by degrees order is replacing a chaotic condition.

Other countries are trying other ways of solving the problem, but no country has so far succeeded or seems likely to do so. This is because in none are the hours and wages of men employed in road transport made similar to those usual on the railways, and in no country has road transport been placed under the same regulations as regards rates, and the same obligations as regards carrying. In the United States an Act prohibits undue preferences, but such legislation cannot be made effective so long as the carriers by road are so numerous and so little organized. A further difficulty in the way of arriving at an economic division of function is that while railway traffic is required to pay rates which will provide for interest on the capital expended on the track, in few countries does the taxation on motor vehicles and their fuel provide for any surplus on their share of the current expenditure on roads. The taxation is increasing, and in the United States preliminary figures indicate it reached the sum of \$1,580,000,000 in 1937, while in Great Britain it totalled about £73,000,000, compared with a current road expenditure of about £60,000,000. Such figures indicate that in this respect the difference between road and rail is being substantially modified.

A matter of grave concern in connection with motor transport is the number of persons killed and injured by motor vehicles on the roads. Much is being done in the way of testing drivers before issuing licences; installing traffic lights, notices, and other systems of control; including highway safety courses in the curricula of primary and secondary schools; improving road surfaces so as to reduce the liability to skid; constructing by-pass roads to reduce the traffic passing through narrow streets in towns; improving the brakes on vehicles and their inspection. In spite of this, few countries can show any material reduction in the toll of accidents. The most that can be said is that the accident are not rising with the growth in the number of vehicles in use. The following figures show the number of automobile deaths per 10,000 motor vehicles in 1936 in the countries named:—

Canada . . . . .	10.5	Great Britain . . . . .	25.1
Union of S. Africa . . . . .	11.2	Germany . . . . .	42.1
Norway . . . . .	12.8	Belgium . . . . .	43.1
United States . . . . .	13.0	Switzerland . . . . .	49.1
Australia . . . . .	16.8	Holland . . . . .	51.1
Sweden . . . . .	23.1	Italy . . . . .	61.1

In the United States of America the deaths have risen every year during the past 15 years except in 1932, and in 1937 were 39,700, which are more than double the number in 1923—18,400. In Great Britain the deaths in 1937 numbered 6,591, which was 30 more than in 1936, while the number of injured was 226,339—a decrease of 1,474. In South Africa in 1936 the persons killed numbered 1,015, and the injured 14,406. (See also AGRICULTURE *Internal Combustion Engine*.)

(W. T. ST.)

**United States.**—Highway transport is America's fastest growing form of public transportation. The volume of business carried is extremely large and constantly growing larger. The enactment of State laws and of the Federal Motor Carrier Act of 1935 already has done much toward putting this form of transport on a firm foundation. The Federal law is being interpreted slowly and gradually along sound economic lines. Since 1935 the Motor Carrier Bureau of the I.C.C. has prescribed rules and regulations governing insurance requirements, and for safety of operations has required reports of accidents serious



enough to involve major injuries and fatalities; has issued identification plates for all carriers coming under the act; has promulgated an accounting classification; has issued a fair-sized number of certificates of convenience and necessity; has prescribed hours of service for drivers; has required the filing of tariffs and forced compliance with the filed rates. But much remains yet to be done, for new applications for extensions and mergers are being filed at a faster rate than they can be passed upon.

The number of truck operations exceeds that of the bus because trucks are used not only by cartage companies in cities but by "over the road" haulers and by private businesses as a part of their service to consumers. Yet the motor-bus has made rapid strides in both city and long haul service. At the end of 1937 bus operations were found in 801 of the 982 cities that had a population of 10,000 or more. Further analysis showed that in 496 of these cities motor-buses have entirely supplanted all other means of fixed route public transportation. This group of companies owned 24,500 motor-buses and in 1937 the number of passengers carried was estimated at 2,810,000,000. Total revenue from operation amounted to \$192,100,000. Inter-city carriers linked together practically every important city and town in the United States. Such carriers owned 24,750 vehicles ranging from 7-passenger sedans to 33-passenger streamlined cruisers operated by large companies on through routes connecting the larger and more important cities. For 1937 it was estimated 627,000,000 passengers were carried by this group and operating revenues totalled \$298,000,000. By far the majority of bus-operating companies were owned by individuals or corporations not connected with other forms of transportation. In cities, however, electric railroads that were still functioning owned 13,500 buses, which are operated as a part of their service, either directly or through subsidiaries. In the inter-city field some 60 steam railroads also had considerable interest in highway transport.

In 1937 the motor-buses operating over regular or fixed routes in the United States with little more than 5% of the combined total plant and equipment investment in passenger transport facilities carried 28.6% of the total number of passengers handled by all facilities and obtained a little more than 27% of the operating revenues and yielded a fairly reasonable return on its investment.

Highway transport by "over the road" haulers was a development dating back to the railroad embargo period during the World War. Born of necessity to get shipments through to destination more quickly, the "ship by truck" movement became general in every part of the country. Regular routes have now been es-

tablished, operating on schedule and charging published tariff rates. Many classes of commodities are handled. More than half the nation's livestock is transported to market by motor truck, along with three-fourths of the perishable fruit and practically all the milk supply of metropolitan communities. The U.S. Department of Commerce showed in 1935 three-fourths of the 188,809 trucks owned by 61,216 for-hire truckers operated locally. It is said that farmers have 1,000,000 trucks. A count of trucks in the 93 cities with over 100,000 population as of July 1, 1936, showed 938,500. From these figures, there are at most 2,000,000 for-hire trucks, of which 75% are found in local cartage.

(C. W. S.)

**Motor Trucks.** In recent years there has been a general tendency to improve the outward appearance of motor trucks, as well as those features of their design which make for driver's comfort. Cabs are now generally of all-steel construction, with well-rounded contours, provision for good vision, and adequate means of ventilation. Appearance has been improved also by the use of deeply crowned fenders and ornamental radiator grilles.

The general design of trucks has been influenced to a considerable extent by local regulations and local conditions with respect to fuel supply. In the United States there has been a strong tendency toward the cab-over-engine type of truck, in which the driver is seated over the engine instead of behind it. This design shortens the truck for a given length of loading space, which is of value in that it conserves space in garaging, parking, etc., and in that it makes the vehicle more maneuverable. It also gives a better distribution of load between the front and rear axles. Heavy four-wheeled trucks usually are equipped with single front and dual rear tires of the same size, and to load all tires equally there must be half as much load on the front as on the rear axle. With the cab-over-engine design this load distribution is easily achieved, whereas with the conventional lay-out the load on the front axle is usually much less than that required by this rule.

A recent trend in British truck design has been to increase the pay-load capacity of trucks of 2½ long tons unladen weight far beyond what has been customary in the past. Up to some years ago such trucks had a pay-load capacity of something less than 2 long tons, but this year a number of British manufacturers have succeeded in producing trucks coming within this unladen-weight limit which have a pay-load capacity of 5½ tons. The reason behind this development is that under a new law adopted some years ago, the speed limit for trucks of less than 2½ tons unladen weight is 30 m.p.h. whereas that for heavier trucks is 20 miles per hour. The total number of trucks of more than 5½ tons pay load produced annually is quite small.

A new type of truck produced in England during the past year has four front steering wheels and two rear driving wheels. The advantage claimed is that there is less side-skidding of tires in turning corners than with the conventional six-wheeler having two steering and four driving wheels, as the steering wheels can be so linked together that in turning corners the axes of all wheels produced meet (nearly) in a common point, which is the condition of skidless turning.

For some years past all trucks of two tons and more load capacity produced in European countries have been equipped with Diesel (heavy-oil) engines, which latter burn a fuel that is cheaper than gasoline, and only about one-half the volume per horse-power-hour produced. In Continental countries, however, and particularly in Germany and Italy, there has been a drive to substitute motor fuels of domestic origin, such as coal gas and producer gas, for the imported petroleum fuels that so far have



RIGHTENING A TARPULIN for a long truck haul through the U. S. South-west





**MOTOR TRUCK** built to travel on railroad tracks or highways without changing tires or wheels

been used almost exclusively. Manufacturers in these countries now equip trucks with engines that are readily convertible from Diesel or compression-ignition to gas or spark-ignition engines.

During the 12 months which ended Sept. 30, 1937, 928,072 motor trucks were produced in the United States and Canada. It is customary to combine the productions of these two countries, because all or practically all Canadian plants are branch plants of firms domiciled in the United States. In the United Kingdom production of motor trucks increased from 92,176 in 1935 to 107,609 in 1936. (See also **MOTOR CARS: Trucks and Buses; MOTOR TRANSPORTATION.**) (P. M. H.)

**Mountain Climbing.** In the Alps the summer of 1937 was favourable until the middle of August, but since the last unclimbed routes of the Matterhorn were overrun by the end of the season in 1932, and the formidable northern cliffs of the Grandes Jorasses were stormed in 1935, the field for new ascents in Europe is exhausted, and explorers turn their attention to more distant ranges.

Fortunately, Alpine accidents were less noteworthy than in 1936. There was one exception, however, in the case of the astonishing drama staged by two young men in Bavaria, who embarked on a particularly difficult way up the Watzmann in bad weather in midwinter. They also created a new precedent in the annals of mountaineering by refraining at first from co-operating with the rescuers and refusing to answer shouts. Eventually the heroic exertions of an enormous search-party, comprising the élite of Bavarian climbers carrying thousands of feet of rope, preceded by aeroplanes and supported by regular troops, made it possible to rescue the two men from the consequences of their folly, and lodge them safely in hospital—but only after a desperate struggle lasting a whole week and gravely endangering numerous lives. The Central Committee of the Swiss Alpine Club has published a manifesto deprecating the granting of testimonials and rewards for mountaineering performances of this sort.

In Alaska a fine achievement by American mountaineers was the first ascent, by Washburn and Bates, of Mount Lucania, 17,150ft. above sea-level, the highest virgin peak in North America.

In the Caucasus a British expedition ascended the south peak of the Matterhorn-like Ushba, and effected a new route up the great ice-face of the beautiful snow-mountain, Tetnuld, another big Caucasian peak.

Among various Himalayan ascents which reached heights of 24,000ft., was a spirited attempt on Kamet, the peak of 25,450ft., first climbed by the Smythe expedition in 1931. In June three

corporals and a private serving in the 1st Battalion of the East Surrey Regiment in India established a camp at 21,000ft., and got to 23,500ft. without the help of any porters. Another fine feat was Chapman's ascent of the great peak of Chomolhari, situated on the borders of Tibet and Bhotan, almost 24,000ft. above the sea. Smythe and Oliver in Garhwal also ascended the fine up-standing satellite of Kamet known as Mana Peak, 23,862ft.: this was described by Smythe as the hardest climb he has ever done.

In the north-west Himalaya one of the strongest parties ever organized, consisting of German climbers under the leadership of Dr. Wien, and accompanied by first-rate Himalayan porters, met with a terrible disaster on the gigantic virgin peak of Nanga Parbat, already notorious for the destruction of ten men under Herr Merkl in the stormy weather of 1934. In 1937, through no fault of its own, practically the whole expedition was wiped out in the night in a minor ice-avalanche which overwhelmed the camp at a height of 20,000 feet.

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**Mount Holyoke College**, pioneer American institution for the higher education of women founded in 1837 by Mary Lyon and situated at South Hadley, Massachusetts. Official centenary celebrations were held on May 7 and 8, 1937, during the administration of Dr. Mary E. Woolley, who completed on June 30 exactly 36 years and 6 months of service as president. She was succeeded by Dr. Roswell Gray Ham, Ph.D., LL.D., whose inauguration took place at the opening of the 101st academic year. Founder's Day exercises on November 5 marked the actual 100th anniversary of the seminary. The registration figures for the 1937 session are: 966 undergraduates, 52 graduate students, 3 unclassified, in residence; 19 students at Mount Holyoke (freshman year) in Hartford, Conn.; 6 juniors in France and 3 in Germany. The faculty numbers 136. The endowment fund, as of June 30, 1937, was \$4,899,649.21; the total college income for preceding year was \$1,257,123.52; the centennial gifts received during 1935-37 were \$920,992.38. (R. G. HA.)

**Mozambique**, a Portuguese colony on the E. coast of Africa, bounded N. by Tanganyika and S. by Natal, with Lake Nyasa and Nyasaland, North and South Rhodesia, the Transvaal and Swaziland on the W.; area 297,700 sq.mi.; pop. 4,028,750, of whom all but 36,000 are natives. Lorenzo-Marques is the capital and one of the chief ports; others are Mozambique, Beira, Porto Amélia and Quelimane. The colony supplies large contingents of native labourers to the mines of the Transvaal and Southern Rhodesia, as well as to its own mines, including gold—of which £1,940 was exported in 1934. The chief products are sugar, maize, coco-nuts and copra, sisal, citrons and beeswax. In 1935 imports totalled about £2,244,630 and exports £1,758,920; and in 1935-36 the budget balanced at about £2,980,000. A small defence force of 100 Portuguese officers and 2,400 men, with 2,000 native troops, is maintained.

There are 460mi. of railway under State administration, and lines from Lorenzo Marques and Beira connect with the general South African railway system, communication also being available to Lobito Bay, Angola, on the W. coast. In 1937 an expenditure of £3,000,000 on new railways, roads, posts, and other public works was sanctioned. There are over 3,150mi. of motor roads in the colony, 7,200mi. of telegraph line, and about 4,000mi. of telephone. Early in 1938 a passenger air-service was inaugurated connecting Lorenzo Marques with the Imperial Airways bi-weekly services with Johannesburg, the largest hangar in Africa having



een erected at Lorenzo Marques. In 1937 the construction of ve directional radio stations was approved.

**Mufti, The Grand** (OF JERUSALEM), Haj Amin Effendi Al Hussein (c. 1878— ), half-brother of is predecessor, was educated for the post at the Azhar university, Cairo; during the World War served with Feisal at Damascus and with the Military Governor of Jerusalem, assisting in recruiting; but after the Balfour Declaration became anti-British, and in 1920 fled to Transjordan to avoid serving a sentence of 10 years' imprisonment. Returning under amnesty, he was (1921) appointed by the British authorities to the Grand Muftiship, in 1922 being elected president of the Supreme Moslem Council, in which capacity he had control both of the religious Courts and of some £120,000 per annum. Responsible to some extent for recurring anti-Zionist disturbances, in 1936 he was elected president of the newly formed Arab High Committee (see PALESTINE), and endorsed the strike against and boycott of the Royal Commission in the autumn, though in Jan. 1937 he appeared before that body, testifying to the complete hostility of himself and his followers to any Jewish home in Palestine. In July 1937, when it was clear that his influence was employed against the administration and the headquarters of the higher Arab Committee was raided by the police, he escaped, and on October 1 was deprived of his offices—the H.A.C. and all National Committees being simultaneously declared unlawful. On October 16 he escaped from his hiding-place in Jerusalem, and was eventually granted asylum in the Lebanese Republic by the French administration, which acted on information received from the British Foreign Office.

**Multiple Shop:** see CHAIN STORES.

**Municipal Airport of Cleveland:** see AIRPORTS: Plan.

**Municipal Airport of Newark:** see AIRPORTS: Plan.

**Municipal Government.** The outstanding events in municipal government during 1937 have to do with public housing, strikes, relief, health, finance, and politics. The United States Housing Authority was set up by act of Congress on Aug. 21, 1937, as a permanent agency, with \$500,000,000 to spend, primarily to encourage public housing in cities. There were, Jan. 1, 1938, some 50 municipal housing authorities; and some 20 municipal projects, including the \$13,500,000 Williamsburg apartments, have been completed under emergency Federal grants. This is the beginning of public housing as a normal municipal function in the United States.

Strikes have been the chief problem of municipal police, though a spectacular crusade against racketeers was carried on in the city of New York by a special prosecutor appointed by the Governor. Sit-down strikes made their appearance with mass and sympathetic picketing. Serious disorder resulted in Chicago, Detroit, Youngstown and other automobile and steel centres. This obscured the nation-wide rise in the urban crime rate for 1937 after five years of steady decline. Municipal relief costs dipped somewhat during the spring and summer, but rose again toward the end of the year. The number employed on work relief decreased continuously as many highway, bridge, park, school and other projects came to completion. Few new major projects were undertaken. (See STRIKES AND LOCK-OUTS.)

The nation-wide anti-syphilis campaign of the U.S. Public Health Service was spectacularly advanced through an intensive city program in Chicago and the beginning of similar campaigns at other centres. The general health record of cities continued to improve along with a drop in death rates. A study of city population by the National Resources Committee, published during

the year, lists 3,165 cities in continental United States, of which 96 are metropolitan districts, and shows that the population of the urban centres does not reproduce itself and that the trend of the city birth rate is still downward. City school attendance figures showed a distinct drop in the early grades.

In the field of municipal finance the trend has been encouraging. By the close of 1937, all but one of the serious debt defaults of the larger municipalities had been composed. Though city tax levies increased slightly, tax collections show less delinquency than at any time since 1931. An important study released by the New York Planning Council shows that premature land subdivision and improvement has been the chief cause of permanent financial and governmental embarrassment in many American cities. Congress enacted a new Municipal Debt Relief Act to take the place of the former Municipal Bankruptcy Act which was invalidated by the Supreme Court. New legislation with regard to municipal accounting, auditing, and reporting was enacted by 20 States. City credit continued to improve. Long-time municipal borrowing fell to its lowest point in ten years, except for 1932, though the municipal bond yield for the 20 largest cities was 2.62% in Jan. 1937, the lowest recorded in 43 years. No important new sources of revenue were developed by cities. New York city and New Orleans continue to be the only important cities levying city sales taxes. Real estate continued to carry 60 to 70% of the local tax load. There were no important city boundary extensions, and city-county consolidation was defeated by the voters in Atlanta, Philadelphia and Milwaukee.

There has been a continuous spread of the merit system among municipal employees. The more notable advances during the year took place in Los Angeles, Akron, Tucson, 11 New Jersey cities and New York city, where "career service" is being extended upward to include the top non-policy posts, and to include police court justices as well. During 1937, pay cuts of municipal employees were restored in many centres. Training schools for city employees, attended by over 15,000 officials, were held primarily by State leagues of municipalities as in New York, Virginia, Kansas, California and Minnesota.

Many important city elections were held. The old-line political machines did not fare well, though they continued to hold certain centres. City manager charters were repealed by the voters in Binghamton, N.Y., and Knoxville, Tenn., but sustained two to one in Toledo, Ohio. In most cities the voters as a whole supported "law and order" and the expansion of municipal services, and showed increased political independence. The most notable election was that in New York city, in which the new Labor Party won the balance of power and joined Fusion in keeping Mayor La Guardia in office with his record of broad social service, efficiency, merit appointments and humanized government. New York's large "rubber stamp" board of aldermen disappeared on December 31 and its place was taken by a city council of 26 elected by "proportional representation." (L. Gu.)

The reorganization of local government areas in England and Wales, begun in 1932 and intended to reduce their number and to bring their boundaries into greater accordance with social and economic realities, was almost completed by the end of 1937. The numbers of urban and rural district councils were considerably reduced, and at the end of the year there were 299 municipal boroughs, 634 urban districts, and 506 rural districts in the country. The county of Middlesex has now achieved the unpleasant distinction of complete urbanization, and is the only administrative county, other than London itself, to have no "rural districts" within its boundaries. No additions have been made for some years to the number of municipal authorities exercising county borough powers; but a number of urban districts, especially in the Greater London (see LONDON) area and in the



industrial midlands and north, have sought and obtained characters of incorporation as municipal boroughs, 32 having done so since 1931.

Local government expenditure in Great Britain now amounts to over £600,000,000 per annum, towards which in 1936-37 about £193,000,000 was raised by local rates, rather over half of the remainder being supplied by Government grants. The rateable value of England and Wales for 1936-37 was approximately £300,000,000.

**Munitions of War.** For the most part, the year 1937 witnessed no revolutionary changes in the composition, evolution, or tactical employment of munitions of war. But if it did not bring forth much that was epoch-making, it compensated in volume and variety for any paucity of invention. All major nations devoted increasingly large proportions of their budgets to the development of existing and experimental types of armament, and all save the United States to the accumulation of huge war reserves of these. Notable was Great Britain, now in the midst of her £1,500,000,000 rearmament program, the cost of which, according to reliable predictions, is likely to come closer to £2,000,000,000 ere it meets completion. (See REARMAMENT.)

Acute international situations emphasized the broad connotation of the word "munitions," which, ever recognized by the military, is at last being better appreciated by the lay civilian. For the term applies by no means exclusively to implements of combat, but rather embraces many of the raw materials entering into their fabrication, or contributing directly or indirectly to their manufacture and employment. Thus the 234,000 gross tons of steel and 427,886 tons of scrap iron exported from the United States in April 1937 (an all-time high for any one month since 1921) largely constituted, in effect, war munitions, although not so classified under her neutrality act of 1935, and caused numerous agencies committed to programs for Universal Peace almost as much concern as though they had been finished guns and projectiles.

Yet whatever their social and economic significance, it is patent that munitions, even in times of peace, are playing an increasingly important part in our daily life. Witness the fact that Poland launched in 1937 an expensive ten-year program for moving her entire armament industry, now located in Upper Silesia, into a triangle of land at the mouth of the San. There, it is best protected in event of hostilities.

With any discussion of munitions is inseparably connected some reference to their tactical employment. Hence frequent mention will be made of observations based upon the current war in Spain, and the resultant effects which these are exerting on armament trends the world over. Such trends have, for the most part, run closely parallel; for secrecy in design and development is well-nigh impossible, one nation's accomplishment of today becoming common property tomorrow. Hence no studied effort will be made to outline the achievements of individual commonwealths, but rather to indicate world-wide tendencies in the following basic instruments of modern warfare.

**Aircraft.**—Huge expansion programs are everywhere in evidence. Thus a credible estimate reckons the number of military aircraft in Europe as of Jan. 1937 at 25,000 to 30,000, with a prediction that this figure might readily be doubled by the beginning of 1938. Great Britain alone budgeted during 1937 a gross of £48,132,000 for her air forces, as against £30,340,000 in 1936.

The military characteristics of aircraft of all types underwent material improvement. The latest bombers operate at top speeds of 250-280 m.p.h., weigh up to 30 tons, have wing spreads of 150

ft. and carry more and larger guns, capable of resisting attack from any angle. Recent observations in Spain indicate that their increased speed perhaps offers greater defence against attack by pursuit planes than does the heavy armament. But all-metal ships have proved more vulnerable to machine-gun and cannon fire than those of composite construction, requiring more extensive repair after damage. And tractable landing gears, injured by gunfire, have caused the loss, on landing, of many ships which might otherwise have been safely grounded.

Fighting planes now attain speeds of 300 m.p.h., with ceiling of 30,000 feet. Conventional armament includes two automatic cannon forward, and two machine guns aft. An automatic landing device perfected during 1937 by the U.S. Army Air Corps and assuring safe landings without human hands touching the controls, constitutes one of the outstanding achievements of the year.

Air transport of troops and *matériel* is receiving increased attention, notably in Russia and France. It is of record that at one manoeuvre in the former country, 1,200 men and 18 guns plus 150 machine guns, light and heavy, were transported 10 miles and then landed by parachutes in eight minutes. Complete field hospitals with full equipments of personnel and *matériel* have likewise been successfully so landed, the number of trained parachutists in the Soviet Army now being estimated at 70,000. Sardonicly, parachutes have proved death traps for many Spanish aviators, their opponents machine-gunning them at leisure after they have left their disabled ships. Spanish war experience has failed to substantiate predictions that civil aircraft can readily and successfully be converted for military use; such planes as have been so converted have proved particularly vulnerable to attack by others of standard military types.

**Anti-Aircraft.**—The accuracy of anti-aircraft fire is constantly increasing, so much so that current observations indicate that the ratio of ships brought down by pursuit craft to those destroyed by gunfire from the ground, which during the World War was five to one, has now been completely reversed in favour of the artillery. The so-called "parallel barrage" in which batteries of anti-aircraft weapons, electrically controlled and synchronized, place a curtain of fire before an advancing plane, has proved highly effective. Searchlights up to 60 in. diameter (mobile) and 80 in. (fixed) now have a range, in clear weather, of 9,000 yards. Employed in groups of four and converging on the target from points 2,000 to 4,000 yds. apart, they render invaluable aid to the anti-aircraft artillery during night operations. Increased perfection in sound-ranging instruments (for detecting the sound of an aeroplane motor at great distances, and locating its position) has also been achieved, although the rapid development of motor silencers offers a new problem to combat. Solution may lie, however, in a recent invention which locates a plane by heat rays emanating from its motor, even though this may at the moment be "cut out" (stopped) to confuse sound detectors.

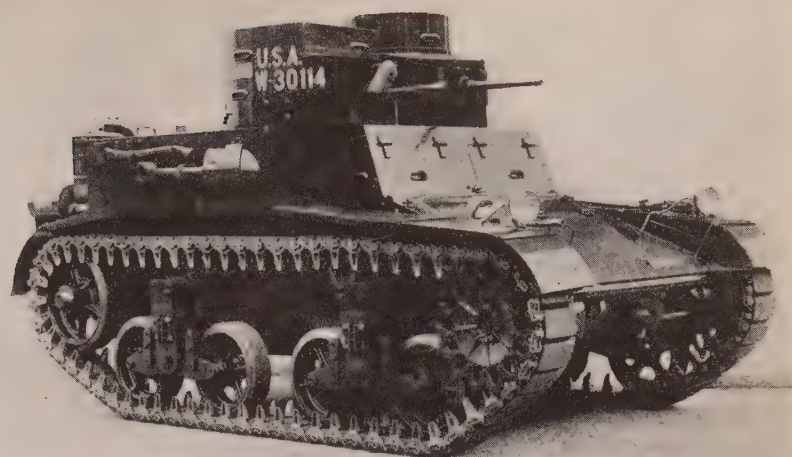
Experimentally, "Grenade Planes" armed with fifteen 45 lb. bombs, to be released successively through "torpedo tubes" from a position above and slightly ahead of a hostile bomber, are said to be under consideration by two major nations. Huge net pendant from floating balloons and designed to entrap oncoming aircraft, are reported as having been developed by at least one of the Great Powers.

**Tanks.**—Armour is increasing in weight, it having been demonstrated that plates of less than 35 mm. in thickness are vulnerable to infantry cannon. As a result, maximum speeds have been revised downward, though a battle speed of 18-20 m.p.h. is still considered most desirable. Armament remains more or less standardized in the form of an automatic cannon of 37 mm. calibre or thereabout, plus one or more machine guns per tank. Diesels





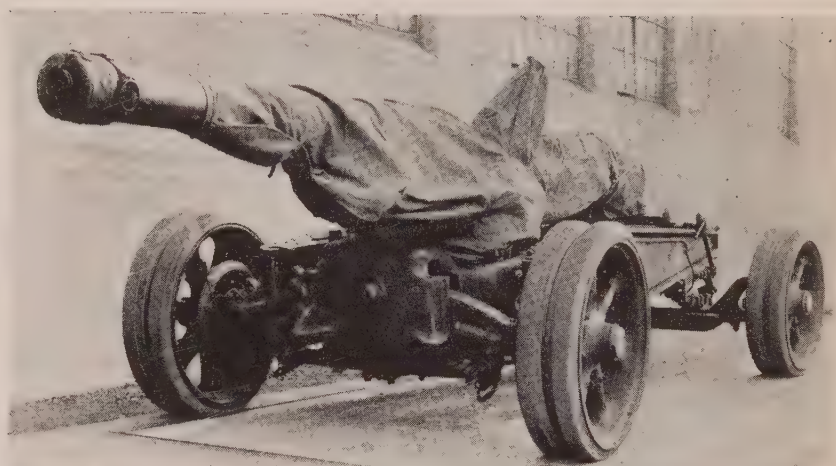
75MM. FIELDPIECE in firing position



TYPE OF LIGHT U.S. ARMY TANK



HOWITZER of 155mm. calibre in firing position



A 155MM. GUN CARRIAGE

lower plants are under constant development, as are motors of more conventional design. France and Russia are devoting some attention to super-tanks weighing up to 70 tons. Certain observers hold that these possess capabilities even in excess of their size, maintaining that seven 100-ton tanks would equal in effectiveness in the field of battle, 100 of seven tons. General practice however indicates a tendency toward standardizing on a light tank of eight to nine tons, and a heavier type of not over fifteen tons. However, mammoth "support" tanks mounting guns of up to 4in. and even 6in. calibre are under consideration in France, and "transport" tanks, for bringing up infantry to consolidate positions gained by battle tanks, appear also to be on the cards.

**Anti-Tank Defence.**—Here, various nations are employing single-shot, quick-firing, and automatic guns of calibres up to 77 millimetres. One German school holds for the value of the first-named because of its readiness of concealment, one-man transport, and consequent possibility of heavy concentration at threatened points. Made in 13.35, 17, and 20mm. calibres, and weighing 65 to 90 lbs., these are modern elaborations upon the 37mm. anti-tank gun of World War fame. Admittedly effective against armour up to 25 or 30mm. in thickness, they would appear ineffectual against the stouter plating now being introduced.

Aside from projectile weapons, other anti-tank agencies being given consideration are mine-fields and "catch trenches" (*i.e.*, tank traps). "Tank Chasers," lightly armoured cars of high manoeuvrability carrying guns capable of penetrating tank hulls, have been tested, but proving highly vulnerable have re-

quired heavier armour, with consequent reduced speed, resulting in their gradual transmutation into veritable tanks themselves. Bombing from above, by aircraft, has not proved effective against massed tank attacks.

**Artillery.**—Trends are toward attaching more and heavier artillery equipment to infantry units. Thus the armament of a Soviet infantry regiment now includes: 81 light machine guns, 60 heavy machine guns, 27 grenade throwers, 6 small cannon (37mm.), 6 regimental cannon (76mm.), and 2 anti-aircraft guns; while Italian practice hereafter will be to incorporate in each infantry regiment, four pieces of pack artillery (*i.e.*, a battery of sixty-five 17mm. cannon). The United States has not gone so far in this direction, however, the tables of organization for an infantry regiment of 110 officers and 2,362 men in her new infantry division of 12,839 men (as against a World War figure of approximately 22,000) calling for 72 light machine guns, 36 heavy machine guns, and 36 light mortars.

**Infantry Shoulder Weapons.**—Despite the fact that various types of semi-automatic rifles were in use during the World War, no nation has as yet completely supplied its foot soldiers with *matériel* of this nature. Such a step is now in progress in the United States, however, that country having entered upon active production of the .30-calibre Garand semi-automatic rifle which will gradually supplant its present infantry piece, the Springfield rifle, model of 1903.

**Chemical Warfare.**—Progress in chemical warfare has been almost entirely in the field of defence. All European nations,



recognizing the possibility of sudden gas attacks, exerted during 1937 every effort toward developing adequate means for neutralizing the danger. Production of gas masks for civilian use in Great Britain reached the stupendous figure of 500,000 per week. This huge output made possible the very modest unit cost of but 2s. 6d. each. (Masks for combat troops are more complicated, more expensive and more efficient.) Germany designates her civilian-type masks as of three classes, one for men, one for women, and one for children. Italy is unique in that her largest life assurance society now offers to advance to its policyholders, loans to finance the purchase of masks at 76-70 lira each.

General tendencies are toward standardization on three types of mask, the most effective for the military and civilians engaged in home defence activities, the second for civilians actively employed but not so engaged, and the third for inactive civilians. Gas-proof clothing for personnel assigned to degassing operations is being produced in increasing quantities. The construction of gas-proof shelters capable of housing one to 8,000 persons is actively under way. In one such, with a capacity of 25 people, power for operating the fan of the air-purifying and ventilating apparatus derives from a bicycle drive actuated by the foot-power of one man. Other similar machines to be operated by two to four men have capacities of about 25 persons per operator. Those with capacities of above 100 persons have motor-driven fans.

**Engineer Corps Equipment.**—Marked advance has been made in reducing the weight, and thus increasing the portability of pontoon boats, as well as of collapsible vessels designed for the transport of troops across small bodies of water. Thus Japan now employs four types of rubber rowboats, weighing from 15.8 to 75.5kg., with capacities of from 2 men for the smallest, to 4 rowers and 12 passengers for the largest. Still another variety, weighing 120kg., is used (in pairs) for the construction of rafts (a platform being added), capable of transporting a fieldpiece with its equipment, or 30 men. The United States has substituted an 1,100lb. aluminium boat for a former 1,800lb. vessel of wood, with highly satisfactory results. Swedish army engineers have developed practicable bridge-building materials from cardboard, which disintegrates in water after serving its purpose. In the field of signal corps equipment, considerable progress was recorded during 1937 toward increased perfection of two-way field radio apparatus. (See also WORLD ARMAMENTS; CHEMICAL WARFARE.) (C. Gd.)

**Murphy, Frank:** see MICHIGAN: *History*.

**Musée d' Art Moderne:** see ART EXHIBITIONS.

**Museum of Modern Art (N.Y.C.):** see ART EXHIBITIONS.

**Museums of Art:** see ART GALLERIES AND ART MUSEUMS.

**Music.** Music in 1937 continued to display the chastened mood that set in after three decades of feverish innovation. That period might be defined as extending from the earliest works of Debussy to the last of Alban Berg. Then one composer after another added to the technical armoury of his craft.

New theories, new 'isms appeared in a procession which ultimately threatened to become monotonous. The lull began to set in a few years ago, and now the musical world is occupied in sorting out, testing, and assimilating the new devices it has acquired. This is naturally less exciting than inventing them, but in the end it is likely to prove more useful to the art of music. It is, however, having one unforeseen result, that of lessening the differences between composers and bringing them back to the use of a common language—or rather two languages, for one great cleavage still divides them, that between composers who are faithful to the principles of tonality and those who have deserted them for atonal methods.

**Music Festivals.**—Apart from this one serious divergence there exist such affinities between young composers of different nations that one commentator on the 15th Festival of the International Society for Contemporary Music (Paris, June 1937) remarked that, if the country of origin of each work had not been indicated, no listener could have guessed it, as "the more you heard, the more they seemed alike." These festivals of music selected by an international jury, no two of whose members may be of the same nationality, constitute a useful gauge of musical fertility, but although primarily designed as an international arena for heterodox musicians who, in the nature of things, encounter opposition, it is noteworthy how, year by year, these become less conspicuous, and the festivals tend to rely more and more upon names which are either already famous or at least familiar.

Thus, at the Paris festival, apart from in memoriam performances of works by Dukas and Szymanowski, who had died during the 12 months preceding the festival, the jury's selection included string quartets by Honegger and Milhaud, a suite by Florent Schmitt, a symphony by Malipiero, which had previously had its world première at Seattle, and other works by composers of note without which the festival would have proved of much less interest. There were works by Conrad Beck, Luigi Dallapiccola, Jean Françaix, Elisabeth Maconchy, Alan Bush, Hanns Eisler—all names previously known—but there were no "discoveries" unless a concerto for string quartet and orchestra by Joseph Valls be accounted such. The Poles arranged a separate concert at which works by Wojtowicz and Maciejewski were applauded, and there the story ends. The Maggio Musicale at Florence was mainly concerned with the past, but an evening was devoted to the memory of Respighi, whose posthumous *Lucrezia Romana* has been completed by his widow, and an oratorio by Malipiero, *La Passione*, was performed.

The Venice Festival of Contemporary Music again brought mainly familiar names to the front: Stravinsky, Malipiero, Dallapiccola, Markievich, Françaix, and Roy Harris. The attention attracted by the International Society for Contemporary Music has led to the foundation of many similar festivals in different countries. But the general report of them is that there was nothing that excited either extravagant enthusiasm or acute controversy. Some say that the musical world is losing its capacity for either, but it is more likely that the capacity has not been put to the test. Yet the attention given to contemporary music has increased considerably.

Early in 1937, the American League of Composers published a statement that during the previous six years it had performed 493 works by living composers, and the Federal Music Project at Washington has listed performances of 5,000 works by 2,000 American composers between Oct. 1935 and March 31, 1937.

Among the various national sections of the I.S.C.M., the British (London Contemporary Music Centre) is outstandingly active, and the British Broadcasting Corporation devotes a monthly concert to contemporary music of the most challenging kind.

In Paris, a new group has been formed after the pattern of Les Six, and the École d'Arcueil. It calls itself "La Jeune France," and consists of Olivier Messiaen (organist, pupil of Dukas), Daniel Lesur (Schola Cantorum), Yves Baudrier, and André Jolivet, eldest (born 1905) and least orthodox of the group.

**Symphonies.**—The most remarkable trend in composition is the general return to the absolute, *i.e.* non-program symphony, which would have aroused the surprise and envy of symphonists of the post-classic era. Glazunov, for instance, one of the last of them, composed his 8th Symphony in 1904 and lived until 1936 without writing another. In the decade following upon the war period one might have thought the symphony moribund. In 1937, Miskovsky eclipsed all modern records by composing his 18th



Symphony. In England Arnold Bax has reached his Sixth and there are rumours of a Seventh.

During the year there have appeared noteworthy symphonies by Edmund Rubbra, George Dyson, and E. J. Moeran. In America symphonies have been produced, among others, by Emerson Whithorne, Samuel Barber, Bernard Wagenaar, and Anis Fuleiman. In Germany, Max Trapp has reached his Fifth. In Holland, Henk Badings is a representative symphonist. Rachmaninoff's Second Symphony was composed in 1907. Thirty years afterwards, in 1937, he produced his Third.

In most musical countries in which the form of the symphony has ever found a home, and in some others, composers have been producing symphonies with an activity unequalled since the 19th century and scarcely exceeded in its later decades. This remarkable phenomenon may be attributed in part to the magnetism of the high state of technical proficiency attained by the modern symphony orchestra, which Sir Thomas Beecham recently described as the most characteristic product of the present age in music. But in a broader sense it arises from the general reaction in favour of a return to the older forms which is so conspicuous a feature in contemporary music. To this reaction may be also attributed the feverish quest of forgotten masterpieces, the revival of symphonies by Johann Christian and Philipp Emanuel Bach, Boccherini, Clementi, and others, and the adaptation to the modern orchestra of old *concerti grossi*.

**Ballet.**—Another phenomenon is the increased interest taken in ballet, sometimes even at the expense of opera. This is conspicuous in England, but perhaps even more so in America, where new producing organizations have been formed and are still coming into existence. It is for one of these that Stravinsky wrote his ballet, *Jeu de Cartes*, produced in 1937 at the Metropolitan and since then in other countries. At Philadelphia, another concern has produced two characteristic American ballets, *Terminus* and *Barn Dance*. *Checkmate*, by Arthur Bliss, was produced by the Vic-Wells ballet while on a visit to Paris in June 1937. In the spring it had presented *The Wedding Bouquet*, a choral ballet by Lord Berners, with text by Gertrude Stein. In the winter it produced Constant Lambert's *Horoscope*. A recently formed Polish ballet visited London in the autumn with several new ballets by Polish composers. Other ballets mentioned in annals of the year are Florent Schmitt's *Oriane, la sans-égale*, Alex. Moormolen's *Diana*, Zdenek Hula's *The Blue Flower*, Vittorio Rieti's *David Triumphant*, Philippe Gaubert's *Alexandre le Grand*, Edwin Karhu's *L'Amour Triomphateur*, but it is impracticable to enumerate them all. The interest has grown to such an extent that it has been found expedient to provide a reference book describing the productions, on the lines of *The Complete Opera Book*, but although it appeared in 1937 it is already in need of a supplement to bring it up to date.

**Opera.**—In comparison, the story of opera in 1937 is less eventful, although new productions have been numerous. In Germany, for instance, six new operas were produced in the month of November alone, but only Joseph Haas' *Tobias Wunderlich* appears to have attracted much attention. Two posthumous productions, of Alban Berg's *Lulu* and of Otakar Ostrčil's *Hansens Königreich*, rank among the more important events. Other operas to be mentioned are Eugene Goossens' *Don Juan de Mañara*, Paul von Klenau's *Rembrandt van Rijn*, Othmar Schoek's *Maschmilla Doni*, Wolf-Ferrari's *Il Campiello*, Malipiero's *Julius Caesar*, Vladigeroff's *Zar Kalosan*, Josef Mandić's *Mirjana*, Bernard Paumgartner's *Rossini in Naples*, Hans Haug's *Tartuffe*, Aramir Weinberger's *Wallenstein*, Roffredo Caetani's *Hypatia*, Albert Stoessel's *Garrick*, William F. Hanson's *The Bleeding Heart of Timpanogos*, and Walter Damrosch's *The Man Without a Country*, but it would require many pages to deal with the year's

output of operas, and there is little reason to suppose that the rate of mortality among them will be any lower than in previous years. The taste in opera inclines strongly to established works. The success of the Mozart performances at Glyndebourne (Sussex) may be regarded as symptomatic. Although costly, and requiring a train journey from London, these admirable performances are so well supported that their advertisements are daily supplemented by the warning "all seats sold."

**General.**—It would be tedious to pass in review, country by country, the activities of the musical world. Those that are interpretative, from repertory seasons to the travels of famous virtuosi, have no permanent interest, and the permanent interest of creative activities needs time to assert itself. In England there has been much such activity in chamber music, revealed in new works, of which Arnold Bax's Third String Quartet is the most important. There has also been remarkable productivity on the part of women composers, characterized for the most part by what a certain writer has called that terrible masculine earnestness rarely found in man. A pang of regret was occasioned by the retirement of Lionel Tertis, the "apostle of the viola," to whose playing and teaching is due the expansion of that instrument's repertoire.

A feature in French music is the renewed interest in choral compositions, of which oratorios such as George Dandelot's *Pax* and Georges Migot's *The Sermon on the Mount*, and cantatas like Milhaud's *Cantate Nuptiale* for the golden wedding of his parents afford evidence. But this tendency has also been observed in other countries. Interesting examples are *The Glorified Kokila* by Piet Ketting, and *Jaani Tulemine* (Midsummer Night) by A. Vedro, respectively Dutch and Estonian.

Germany's music continues to be affected by political issues, the most "advanced" of her composers being forced to seek audiences elsewhere.

One of the most musically active countries has been, as usual, Czechoslovakia, but even from the smaller countries which date their existence from Versailles, such as Estonia, come reports of increased attention given to music. In some other cases there is a lurking suspicion that authorities have discovered the value of music for propaganda purposes. If only all propaganda were equally harmless.

An interesting development is the foundation, by Bronislaw Huberman, of the Palestine Symphony Orchestra at Tel Aviv. Its guest conductors have included Toscanini, Dobrowen, Dr. Malcolm Sargent, and others.

Western music is expanding in Japan, where Alexandre Tcherepnin holds an annual contest in composition. This year's winner was Akira Ifukube who is stationed in Hokkaido and self-taught, with *Bon Odori*, founded on a country dance tune. Another competition was sponsored by Joseph Rosenstock, conductor of the New Symphony Orchestra, founded 12 years ago by Viscount Hidemaro Konoye, who has recently been conducting in Europe and America. This brought to light: a Symphonic Suite by Toshiji Ogiwara; *Adagio in modo antico* by Kishio Hirao; *Four Parodies* by Shiro Fukai; *Symphonic Étude* by Bunya Koh; and a Piano Concerto by Saburo Moroi.

Musical activities have come to a standstill in war-stricken Shanghai, but in the last month of 1936 there was produced there a ballet *The Dream of Wei Lien*, by Aaron Avshalomov (born Nikolaievsk 1894), who has made special studies in Chinese music, and its use of the pentatonic scales. It was performed by a Chinese cast with the Municipal Orchestra under the composer's direction, and is reported to have been a remarkably interesting production, musically and choreographically. If possibly the Far East is here given disproportionate attention it is simply because the extension of musical activities has become coterminous with



the planet and that, in itself, is a circumstance that claims to be placed on record.

In 1937 America lost the composers Henry K. Hadley and Arthur Foote. In a different sphere the death of George Gershwin was a blow, for he had aroused definite hopes of bridging the unfortunate gulf between popular music and that of the concert-room. America also lost the two last survivors of the "old guard" in musical criticism, Richard Aldrich and W. J. Henderson.

(E. E.)

**Music Festivals:** *see* MUSIC.

**Mussolini, Benito** (1883– ), Italian statesman and dictator; born at Predappio, and educated at Lausanne university, entered journalism, and edited Socialist papers before the World War, in which he served and was wounded; became premier of Italy after the Fascist "March on Rome," 1922. After qualifying as an air pilot on Jan. 12, 1937, Signor Mussolini in March visited Libya to inaugurate the new strategic road driven westward along the coast from the Egyptian frontier. In June he received the Grand Cross of Hitler's recently established Order of Merit of the German Eagle. At the end of July Mr. Neville Chamberlain, the British premier, addressed a personal letter to "Il Duce" expressing his hopes for the resumption of normal and friendly relations between the two countries and the recipient replied in a like friendly strain, following up this gesture by a speech on Aug. 20, at Palermo, where he had attended the Italian naval manoeuvres, in which he asserted that a permanent reconciliation with Britain was possible, and referred to the Italian determination to keep Bolshevism out of the Mediterranean. From Sept. 24 to 29, Mussolini was in Germany, visiting the Krupp works, attending the German army manoeuvres, and conferring on Herr Hitler the title—shared only with himself—of "Corporal of Honour" in the Fascist militia. On the 28th he addressed, with the new Corporal, a large audience in the Berlin Olympic stadium. On Oct. 28, in the presence of Hitler's representative, Herr Rudolf Hess, Mussolini celebrated in his capital the anniversary of the "March on Rome" by distributing medals to the relatives of 1,790 Italian soldiers killed in the Spanish civil war, and laid stress in a speech on the growing friendship between Italy and Germany. The following day he inaugurated Aprilia the fourth town to be built on the newly drained Pontine marshes. On Nov. 20 was announced Mussolini's assumption of the portfolio of Italian Africa in his own cabinet; and his last important act of the year was to announce, in a speech at Rome on Dec. 11, Italy's decision to leave the League of Nations.

**Mustard Gas:** *see* CHEMICAL WARFARE.

**Mutton:** *see* MEAT.

**Nahas Pasha, Mustapha** ( ?– ), Prime Minister of Egypt, is of humble parentage, started life as a telegraph clerk, but later qualified in law at Cairo and became a judge. After the World War, his activities as a Nationalist led to his deportation, with Zaghlul and others, to Malta, but his exile was brief, and he became chief Wafdist representative in Sarwat Pasha's Coalition Government, and, on Zaghlul's death in August 1927, leader of the Wafdist party. In February 1928 he successfully opposed the projected treaty with Great Britain because it did not provide for the complete evacuation of the British troops. He was premier from March to July of that year, and again for a short time early in 1930. In March 1936 he headed the Egyptian delegation to the conference that preceded the signing (August 26) of the Anglo-Egyptian Treaty of Alliance, by which Egypt attained sovereign statehood,

and in May again became premier, holding also the portfolios of the Interior and Health. In April-May 1937 he led the deputation to the Montreux Conference, and added to his popularity by negotiating the abolition of the Capitulations.

On Nov. 28, 1937, an attempt on his life was made near Heliopolis by a young anti-Wafdist "Greenshirt," who turned out to be a grandson of Arabi Pasha—whose revolt in 1882 led to British intervention in Egypt. The country was deeply stirred by the news of this attempted assassination, for Nahas Pasha is everywhere regarded as a calm and confident statesman, entirely honest, disinterested and loyal to his comrades and countrymen.

On December 30, following a disagreement between King Farouk and Nahas Pasha concerning, among other matters, a projected bill to protect the Constitution and the maintenance by the Wafdists of a "Blueshirt" army, the King dismissed Nahas Pasha together with the entire cabinet.

**Narcotics:** *see* DRUGS AND DRUG TRAFFIC.

**Natal:** *see* SOUTH AFRICA, UNION OF.

**National Archives,** a Federal agency of the United States created by act of Congress approved June 19, 1934. Its major objectives are: (1) the preservation in the National Archives building of all inactive records of the Government of such administrative value or historical interest that they should be permanently preserved; (2) to administer such records so as to facilitate their use by the Government and by scholars. The act provides for appointment by the President, subject to confirmation by the Senate of an Archivist of the United States and defines his duties. It authorizes him to inspect the records of any agency of the United States Government, to requisition for transfer to the National Archives such records as the National Archives Council, created by the act, shall approve for transfer, and to make regulations for their arrangement, custody, use, and withdrawal. He is authorized also to accept from non-Government sources motion pictures and sound recordings pertaining to and illustrative of American history, and to preserve them for historical purposes and study. R. D. W. Connor was appointed Archivist of the United States by President Roosevelt on October 10, 1934.

The erection of a National Archives building was first proposed by President Hayes in 1877. On December 10, in a special message to Congress, he called attention to recent fires in Government buildings which had destroyed or imperiled important public records, and recommended as a means "for securing these valuable archives" the erection of a fireproof "hall of records." Congress took no action at that time. Following similar fires in 1880 and 1881, the Senate passed a bill authorizing the erection of a hall of records, but the House of Representatives failed to act on it. For more than forty years thereafter Presidents, cabinet officials, historical and patriotic societies, and many others repeatedly urged Congress to take the necessary action. During this period bills authorizing the erection of a hall of records were introduced at every session of Congress but failed of passage. It was not until 1926 that Congress authorized the erection of a National Archives building. The cornerstone of the building was laid on Feb. 20, 1933; the building was completed on Feb. 19, 1937, at a total cost of approximately \$13,000,000. It was designed by John Russell Pope in the classical style to harmonize with the Capitol, the White House, and other buildings in Washington.

The building has a storage capacity of approximately one million cubic feet of records. At the close of the calendar year 1937 110,000 cubic feet of records had been transferred to the building. These include the files of the United States Senate through the 70th Congress, and transfers from all of the Executive Depart-



nents and many other Government agencies. Valuable documents in bad condition are protected by coating each side of the paper with cellulose acetate by means of heat and pressure.

(R. D. W. C.)

**National Congress of Parents and Teachers:** see PARENTS AND TEACHERS, NATIONAL CONGRESS OF.

**National Debts.** In all but a few instances, the year 1937 was one of increasing national debt. In the United States, the amount passed \$36,000,000,000 despite the desire of the Administration to reverse the rising trend. In Great Britain, there was little change during 1936 and early 1937, but authorization of a £400,000,000 rearmament program of which one-quarter was funded in April extended the debt beyond £8,500,000,000. Large increases also proved necessary in France, Germany and Russia, it being only in smaller countries like Austria, Hungary, Norway, Poland and Sweden where reductions were made.

There are several factors which make a comparison of national debt structures difficult. Not only must one rely on figures from Government sources which are usually interested in understating their debt burden, but one must also use exchange rates which are variable in the changing of figures so that debts may be compared. In many countries, too, a large amount of public debt is carried by localities, which while omitted in this discussion, actually adds greatly to the economic burden of many nations when compared with those where local obligations are small. Bearing such limitations in mind, however, it is interesting to compare the status of leading nations in respect to their national debt. While figures are not for the same date, they represent the general picture for the year with the translation of exchange based on the rates of Dec. 31, 1937.

The accompanying table shows that Great Britain and the United States had by far the largest debts, the former slightly exceeding and the latter rapidly approaching \$40,000,000,000. France with over \$13,000,000,000, Germany with over \$7,000,000,000, Italy with over \$6,000,000,000, and Canada, Russia and Japan with over \$3,000,000,000 each, followed. Per capita figures,

however, offer a more satisfactory method of comparing the debt burden of these countries. Thus while Great Britain and the United States have debts of approximately the same size, the individual burden in Great Britain is \$891.52 as compared to but \$281.80 in the United States. In fact despite their smaller total debts, Canada (\$340.98), France (\$311.93), and even Switzerland (\$297.36) also exceed the United States on a per capita basis. Other burdens exceeding \$200 were Belgium (\$236.90), Netherlands (\$232.81) and Australia (\$209.84). At the opposite end of the scale were Bulgaria (\$7.60), Colombia (\$13.93) and Finland (\$19.24) as well as the populous countries of China (\$2.23) and Russia (\$21.46) whose large debts were small in proportion to the number of inhabitants.

Classification of the British debt reveals that £3,519,079,197 or 44.4% was in unfunded internal obligations, £3,364,884,607 or 42.5% was funded, and the remainder of £1,032,563,090 was external. By far the largest single item was the 3½% war loan which totalled £1,911,458,825. So many changes occurred in individual items of the United States debt during the fiscal year, June 30, 1936, to June 30, 1937, that the following chart is necessary to indicate their nature:

	June 30, 1937	June 30, 1936
<i>Held Outside Treasury</i>		
Pre-war bonds . . . . .	\$ 198,000,000	\$ 200,000,000
Treasury bonds . . . . .	19,936,000,000	17,168,000,000
U.S. Savings bonds . . . . .	800,000,000	316,000,000
Adjusted Service bonds . . . . .	389,000,000	945,000,000
Treasury notes . . . . .	10,617,000,000	11,381,000,000
Treasury bills . . . . .	2,303,000,000	2,353,000,000
Matured debt, no interest . . . . .	119,000,000	169,000,000
Debt bearing no interest . . . . .	506,000,000	620,000,000
<i>Held for Special Funds</i>		
Government Life Insurance . . . . .	500,000,000	
Old Age Reserve Account . . . . .	267,000,000	
Government Retirement . . . . .	315,000,000	281,000,000
Adjusted Service Certificate Fund . . . . .	38,000,000	127,000,000
Unemployment Trust Fund . . . . .	312,000,000	19,000,000
Postal Savings System . . . . .	30,000,000	100,000,000
Federal Deposit Insurance . . . . .	95,000,000	100,000,000
<i>Total</i> . . . . .	\$36,425,000,000	\$33,779,000,000

Table of National Debts

Country	Date 1937	1937 Debt in Local Currency	1937 Debt in Dollars	1937 Per Capita Debt	Date 1936	1936 Debt in Local Currency
Australia . . . . .	6-30	350,291,499 pounds	\$1,401,166,000	\$209.84	6-30	346,576,294 pounds
Austria . . . . .	1-1	3,567,300,000 schillings	674,576,430	99.80	1-1	3,691,600,000 schillings
Belgium . . . . .	9-1	57,229,000,000 francs	1,945,727,442	236.90	9-1	55,799,000,000 francs
Bulgaria . . . . .	1-1	1,363,886,462 francs	46,277,731	7.60	1-1	989,569,946 francs
Canada . . . . .	3-31	3,542,521,139 dollars	3,538,281,104	340.98	3-31	3,431,944,026 dollars
China . . . . .	1-1	1,023,202,581 dollars	1,023,202,581	2.23	1-1	818,573,352 dollars
Colombia . . . . .	6-30	247,905,755 pesos	123,857,877	13.93	6-30	229,187,988 pesos
Czechoslovakia . . . . .	1-1	46,726,577,368 koruny	1,638,269,330	111.29	1-1	40,933,673,851 koruny
Denmark . . . . .	9-30	1,229,000,000 kroner	274,251,350	73.99	1-1	1,220,000,000 kroner
Finland . . . . .	9-30	3,182,900,000 finmarks	70,421,662	19.24	9-30	3,116,000,000 finmarks
France . . . . .	8-31	384,591,000,000 francs	13,049,557,421	311.93	8-31	360,645,000,000 francs
Germany . . . . .	6-30	17,437,600,000 reichmarks	7,032,121,520	106.48	6-30	15,463,000,000 reichmarks
Great Britain . . . . .	3-31	7,916,526,894 pounds	40,002,593,155	891.52	3-31	7,916,412,462 pounds
Greece . . . . .	1-1	79,877,364,868 drachmae	732,574,823	108.59	1-1	75,000,000,000 drachmae
Hungary . . . . .	6-30	1,762,260,000 pengos	352,478,370	39.61	6-30	1,918,287,000 pengos
Italy . . . . .	4-30	114,252,635,000 lire	6,015,401,233	141.21	9-1-34	170,000,000,000 lire
Japan . . . . .	9-30	10,785,600,000 yen	3,134,295,360	45.40	9-30	9,854,300,639 yen
Netherlands . . . . .	1-1	3,544,605,000 guilders	1,972,977,237	232.81	1-1	3,459,022,000 guilders
Norway . . . . .	1-1	1,602,000,000 kroner	402,342,300	148.82	1-1	1,634,000,000 kroner
Peru . . . . .	1-1	711,928,000 soles	174,422,360	26.83	1-1	690,417,527 soles
Poland . . . . .	3-31	4,729,831,388 zlotys	807,721,997	26.95	3-31	5,007,800,155 zlotys
Rumania . . . . .	4-1	108,449,171,124 lei	813,368,783	42.73	4-1	108,042,534,805 lei
Russia . . . . .	1-1	23,304,892,925 roubles	3,558,412,248	21.46	3-31	19,908,892,925 roubles
Sweden . . . . .	6-30	2,236,798,066 kronor	576,610,322	92.50	6-30	2,387,183,493 kronor
Switzerland . . . . .	1-1	5,448,015,000 francs	1,232,118,631	297.36	1-1	5,204,571,000 francs
Turkey . . . . .	5-31	508,623,916 pounds	408,730,179	23.36	5-31	505,762,473 pounds
United States . . . . .	6-30	36,424,613,732 dollars	36,424,613,732	281.80	6-30	33,778,543,494 dollars
Uruguay . . . . .	1-1	307,865,488 pesos	169,340,989	82.98	1-1	302,687,889 pesos



**National Defence:** see NATIONAL GUARD.

## National Defence Contribution.

Having come within £1,500,000 of balancing his 1937-38 budget (see BUDGET: *Great Britain*), Mr. Neville Chamberlain in England announced a new tax, the "national defence contribution," on the growth of the profits of trades. Whereas he had forecast a rising defence expenditure for the next two or three years, he purposed to borrow in 1937 the full average sum authorized to be spent out of loan for that purpose. To meet the future rise in budget expenditure, he needed "some device capable of growth in itself but easily adjustable." From current profits (less losses) would be deducted either of two standards, at the tax-payer's choice: the "capital standard," being for companies 6%, for individuals and firms 8%, on the capital employed or the "profits standard," being the average profits of 1933, 1934 and 1935.

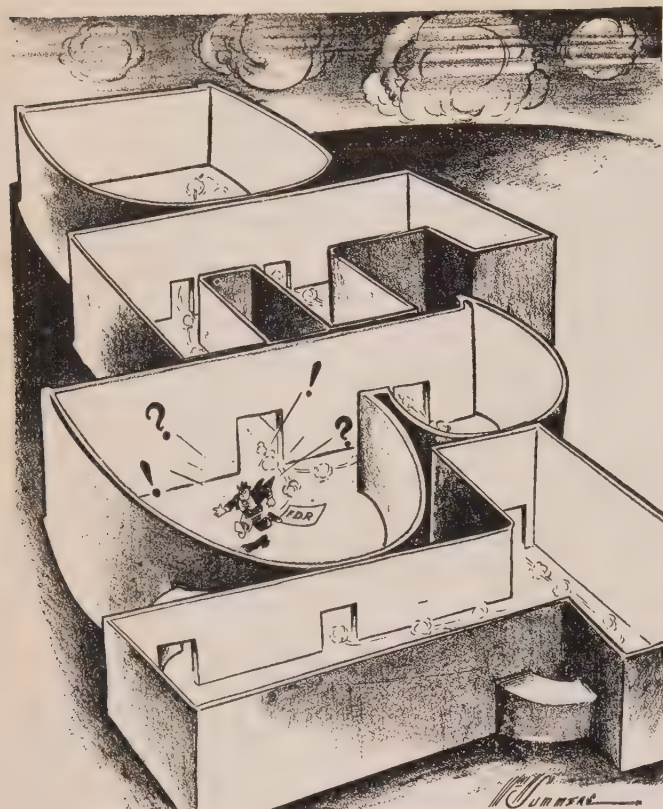
The remainder would be taxed at a graduated rate from nil to one-third, according to the profit ratio and to its relative growth. This "special and temporary" contribution would not apply to professions or employment, or to profits below £2,000. Its estimated yield in 1937-38 was £2 millions and in a full year £25 millions to £25 millions.

The proposal provoked widespread opposition. As a result, the Finance Bill embodied a number of amendments, chiefly these: the "profits standard" would be the choice of the three best years between 1933 and 1936 or the two best between 1933 and 1935; the exemption limit of 6% under the "capital standard" would be raised in cases of exceptional risk, wastage, or deferred yield; and the scale of tax was lowered.

These and other concessions would reduce the annual yield to £15 millions.

When, however, the new chancellor of the exchequer, Sir John Simon, presented the bill on June 1, he faced such damaging parliamentary opposition that Mr. Chamberlain, now prime minister, intervened with a promise to substitute a simpler tax yielding £25 millions a year.

This new version consisted of a flat rate of tax—5% for companies and 4% for unincorporated concerns—upon all profits after deducting interest and other annual charges. Professional incomes, and profits of public utilities with statutory limitations on their prices or dividends, would be exempt, and the tax might be wholly or partly remitted in order to encourage industry to settle in the Special Areas. The contribution, accepted by Parliament in this form, was estimated to yield £25 millions in a full year, subject to proportionate loss of income tax. (H. V. H.)



THE "MYSTIC MAZE" of U.S. governmental debt, as pictured by Summers in *The Cleveland News*

Although the growth in the amount of bonds outstanding accounted for a majority of the debt increase, a considerable portion (41%) was composed of funds which while adding to the debt were paid from new and specialized sources of revenue collected for a definite purpose. The outstanding reduction was in adjusted service bonds and certificates which were paid off to war veterans at a rapid rate.

Warnings against mounting debt structures were frequent during 1937. Despite the general alarm, however, there were no important defaults, although there was considerable refunding to secure lower interest rates. Changes in the valuation of currencies of certain countries complicated the international situation and caused sudden shifts in debt interrelationships. With the business recession of the last months of the year seriously reducing incomes in many countries, there was little indication that the rising debt trend would be reversed for some time to come.

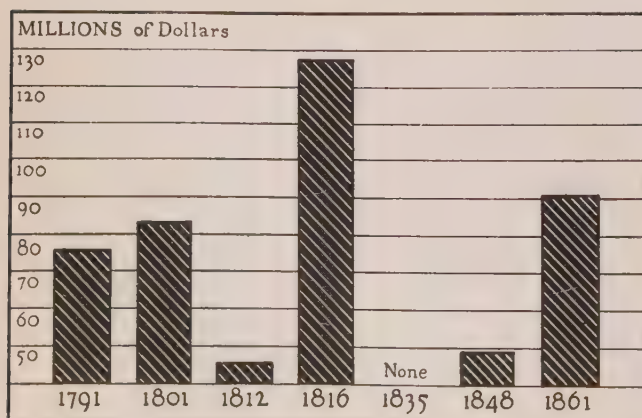


Fig. 1—DEBT OF THE UNITED STATES at various points during the formation of the government and up to the outbreak of the Civil War—in millions of dollars

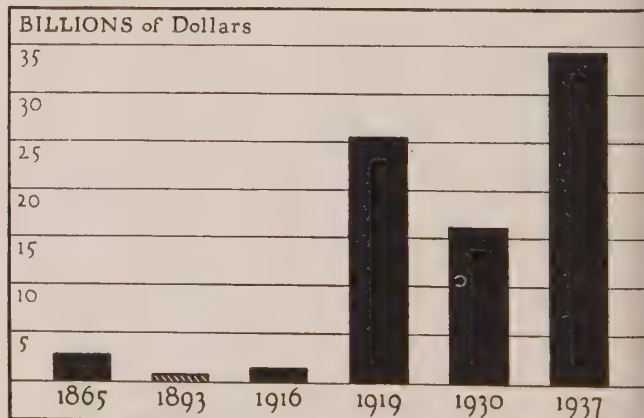


Fig. 2—DEBT OF THE UNITED STATES at various dates from the Civil War to the present time. Note that in this table the columns represent billions of dollars—in the other table millions: also that the debt in 1893 was less than a billion



**National Education Association,** an association dedicated to the upbuilding of democratic civilization and supported by the loyal co-operation of the teachers of the United States "to advance the interests of the teaching profession, promote the welfare of children, and foster the education of all the people." The Association's Representative Assembly is composed of delegates from 52 state and territorial associations and 600 affiliated local units. The Association has a direct membership of about 200,000. Special branches of education are represented by 24 departments such as School Administrators, Elementary Principals, Secondary Principals, Classroom Teachers, Adult Education, and the like.

Important publications of the Association during the year were the *Journal*, a monthly periodical which goes to all members; the *Proceedings*, a 987-page report of the Association's conventions; the *Research Bulletin*; department bulletins and yearbooks; material for American Education Week; and many special bulletins and reports. The Association's winter convention was held at New Orleans in February 1937, attendance 10,000; its general convention at Detroit in late June, attendance 12,000. Three of the Association's most active committees during the year were the Educational Policies Commission, which published a 128-page book *The Unique Function of Education in American Democracy*; the Committee on the Horace Mann Centennial; the Committee on Social-Economic Goals, which issued an important report entitled *Implications of Social-Economic Goals for Education*. The Association has been active during the year on behalf of teacher welfare (salaries, tenure, retirement, and freedom of teaching) and upon the Harrison-Black-Fletcher Bill, providing substantial federal aid to general education. (See also ADULT EDUCATION.)

(J. E. Mo.)

**National Farmers' Union.** In 1936 the union, which has 130,000 members in England and Wales, took the initiative in setting up a Co-ordinating Committee with the Farmers' Unions of Scotland and Northern Ireland. It is also represented on a Standing Joint Committee with the Central Landowners' Association. The Union in 1937 accepted an invitation to send representatives to an Empire Producers' Conference, to be held in Sydney, N.S.W., in March 1938, which is to consider the question of setting up a permanent body to represent farmers' interests throughout the Empire. This is a matter of great importance in view of the Ottawa and foreign trade agreements.

The year was notable for the passing of the Livestock Industry Bill and the Agriculture Bill. In connection with the former, the co-ordinating committee of the three unions nominated Lord Bingley as representative of the interests of United Kingdom producers on the International Beef Conference and Empire Beef Council. The union set up a Diseases of Animals Committee, which will function in connection with the disease eradication program under the Agriculture Act.

The union again represented producers' interests in the negotiation of contract terms and conditions for the growing of sugar beet in 1938, and unsuccessfully opposed before the Railway Rates Tribunal the railway companies' application for a 5% increase of rates and charges. (See MARKETING BOARDS.)

(C. Fy.)

**National Finance:** see BANKING; BUDGET; EXCESS PROFITS TAX; GOLD RESERVES AND GOLD STANDARD; GOVERNMENT EXPENDITURES; INCOME TAX; NATIONAL DEBTS; NATIONAL INCOME; PROCESSING TAX; SALES TAX; WEALTH AND INCOME, DISTRIBUTION OF.

**National Gallery of Art:** see ART EXHIBITIONS; ART GALLERIES AND ART MUSEUMS.

**National Geographic Society.** Organized in 1888 "for the increase and diffusion of geographic knowledge," and since 1899 directed by Gilbert Grosvenor, the National Geographic Society rounds out a half-century of noteworthy achievement in 1937. It now has a membership of 1,100,000 in all parts of the world—the largest educational institution of our time. During its 50 years the society has sent into the field numerous scientific expeditions which have made important discoveries and added substantially to mankind's knowledge of geography, meteorology, oceanography, volcanology, and allied fields. Other expeditions have brought to light chapters of unrecorded history. Narratives of these expeditions and other explorations, and its photographic surveys, are presented to the society's membership in the *National Geographic Magazine*. To form a pictorial record of world geography the society has assembled a gallery of some 250,000 photographs, many in natural colour.

During 1937 the society sent expeditions to Canton island in the Pacific ocean to observe the total eclipse of the sun of June 8 (in co-operation with the U.S. Navy); into the interior of semi-tropical Kwangsi Province, south-eastern China, to study little-known tribes and to collect plants and animals; to the Netherlands Indies to collect animals and birds; and to South Africa to study and photograph the crowned hawk-eagle and other rare birds. The society's Special Gold Medal was presented to Dr. Thomas C. Poulter for his scientific achievements as director of research of the Byrd Antarctic expedition of 1933–35. Continuing its map series the society published a map supplement of South America in ten colours and pictorial maps of the White mountains of New Hampshire and of the British Isles. The society published *The Book of Birds* in two volumes, edited by Dr. Gilbert Grosvenor and Dr. Alexander Wetmore, the first comprehensive work containing illustrations in colour of all the major species of American birds north of Mexico.

Some of the studies reported in the *National Geographic Magazine* were: Indian life in the United States by Dr. M. W. Stirling, chief, Bureau of American Ethnology, Smithsonian Institution; the Aztec Empire in Mexico, by F. H. H. Roberts, Jr., Smithsonian Institution; observations on the total solar eclipse of July 1936, in Russia, by Dr. I. C. Gardner of the National Bureau of Standards; butterfly migrations, by Dr. C. B. Williams, chief entomologist, Rothamsted Experimental Station, Harpenden, England; effect of the gulf stream on the distribution of fish life in the north Atlantic ocean, by Dr. R. W. Miner, curator of marine life, American Museum of Natural History; native customs in Uganda, by Jay Marston; new plants in the vicinity of Peking, by P. H. and J. H. Dorsett, U.S. Department of Agriculture; explorations in the Cape Horn region, by Amos Burg.

Illustrating the 54 articles published in 1937 were 1,607 photographs, 383 in colour, and 27 maps accompanying the text.

(G. Gr.)

**National Guard.** The effectiveness of the land forces of the United States was measurably increased by amendments to the National Defense Act in 1933 and 1935. This legislation conferred a certain Federal status on the National Guard of the several states by creating a new reserve component of the Army of the United States called the National Guard of the United States. At the same time provision was made for the establishment of a reserve for the National Guard called the Inactive National Guard. The creation of the National Guard of the United States makes for that speed and unity of action essential in a 20th century conflict. Thus, once the Congress has declared an emergency the President is authorized to order the National Guard into active service without further procedure of any sort.



The military advantages accruing from this change are immediately apparent when compared to the former time-consuming method. So, too, the dual status conferred upon the National Guard by this legislation obviates the uneconomic mustering out and disbandment of units at the termination of an emergency; now units merely revert to their State status when the emergency is past.

In addition to these beneficial changes, Congress has also made provision for the creation of a pool of additional officers with the view of enabling the Guard to bring its officer corps to war strength without recourse to other agencies. Other legislation has increased this component to an authorized strength of 205,000 but the funds necessary to activate the last 5,000 are not yet available. It is the intent of the War Department, however, to bring the total strength of the Guard to 210,000.

As a result of these far-seeing amendments the National Guard has become a still more formidable instrument of national defense. Today it is prepared physically, morally and materially to take its place promptly in the first line of defense shoulder to shoulder with the Regular Army. (See also ARMIES OF THE WORLD.) (A. H. BL.)

**National Income.** At the present time, because of fundamental economic and political changes being wrought throughout the world, more than ordinary interest attaches to information which permits economic comparisons of the various nations. Unfortunately, there are very few bases for satisfactory analyses. Perhaps the most comprehensive measurement of the operation of any economy is the national income. In this article an attempt is made to bring together as many estimates of national income in various countries as are available and to present the results within the limited space allotted. The gravest danger of such an undertaking is the likelihood of oversimplification.

The figures shown in the accompanying tables generally tell their own story and, therefore, the major portion of the article

will relate to the limitations of the figures. The reader is advised to give adequate consideration to these qualifications before drawing any conclusions from the tables.

In the United States estimates of the national income have been prepared with a degree of completeness and care which is equalled by few if any countries. While research in this field in Great Britain and some other countries was begun earlier than in the United States, the general absence of continuous participation by governmental or independent research agencies in these countries has delayed progress. Most of the estimates shown in Table I are unofficial and many are so lacking in comparability from one period to another as to discourage too much reliance on changes in their relative magnitudes. The inherent limitations of the various estimates may be assigned to two elements, namely, the differing accuracy of the figures themselves and differences in the concepts and scope of the estimates.

While statistical source materials in the United States and Great Britain still leave much to be desired, nevertheless, the various censuses, income tax reports, and other primary reports provide data well in advance of most other countries. Even though the income estimates are developed carefully for some nations, they might be subject to wide margins of error because of the fact that absolute figures are available for only small segments of the economy. In other countries even with fairly satisfactory primary data, the income estimates represent little more than well considered guesses. National income has been defined in innumerable ways by economists and statisticians. In the United States, estimates are presented for the national income produced which is defined as "the net value of goods and services produced," and also for national income paid out which represents "compensation to individuals for the labour, capital and management services they render." Generally, most of the estimates included herein tend to represent income produced. Differences in the scope and coverage of the various series, however, are particularly significant. Some economists still advocate the inclusion only of physical commodities and the exclusion of intangible serv-

Table 1. Per Capita National Incomes in Various Countries

Country	Middle 1920's				Late 1920's				Most Recent Years			
	Year	Population	Per Capita Income		Year	Population	Per Capita Income		Year	Population	Per Capita Income	
			Dollars	Pounds			Dollars	Pounds			Dollars	Pounds
Argentina . . . . .	..	..	..	..	1929	11,200,000	\$388	£ 80	..	..	..	..
Australia . . . . .	1924	5,900,000	\$477	£108	1927-28	6,200,000	504	104	1933-34	6,700,000	\$339	£ 73
Belgium . . . . .	..	..	..	..	1928	8,100,000	178	37	..	..	..	..
Bolivia . . . . .	..	..	..	..	1929	3,100,000	86	18	..	..	..	..
Bulgaria . . . . .	1926	5,500,000	62	13	1929	5,800,000	57	12	1934	6,100,000	51	10
Canada . . . . .	1927	9,500,000	579	119	1930	10,200,000	582	120	1936	10,900,000	412	83
Chile . . . . .	..	..	..	..	1929	4,400,000	182	37	1934	4,500,000	119	24
Colombia . . . . .	..	..	..	..	1929	8,000,000	97	20	..	..	..	..
Czechoslovakia . . . . .	1925	14,200,000	172	36	1929	14,600,000	185	38	..	..	..	..
Denmark . . . . .	1927	3,500,000	267	55	1929	3,500,000	281	58	1935	3,700,000	242	49
Finland . . . . .	1926	3,600,000	118	24	1929	3,600,000	136	28	1936	3,800,000	119	24
France . . . . .	1928	41,000,000	201	41	1929	41,100,000	233	48	1936	41,900,000	276	56
Germany . . . . .	1925	62,400,000	229	47	1929	64,000,000	282	58	1936	67,100,000	370	74
Great Britain . . . . .	1924	44,800,000	398	90	1929	45,700,000	466	96	1935	47,000,000	472	95
Greece . . . . .	1927	6,800,000	98	20	..	..	..	..	1933	6,700,000	52	12
Hungary . . . . .	1927	8,500,000	113	23	1929	8,700,000	92	19	..	..	..	..
India . . . . .	1924	330,000,000	37	8	1929	352,800,000	29	6	..	..	..	..
Italy . . . . .	1927	40,800,000	115	24	1929	41,500,000	128	26	1932	41,800,000	84	24
Japan . . . . .	1925	59,700,000	66	14	1928	64,400,000	89	18	1936	69,200,000	55	11
Latvia . . . . .	1925	2,100,000	54	11	..	..	..	..	1935	2,000,000	161	33
Netherlands . . . . .	1925	7,400,000	284	59	1928	7,600,000	372	76	..	..	..	..
Norway . . . . .	1927	2,800,000	251	52	1929	2,800,000	208	43	1936	2,900,000	197	40
Peru . . . . .	..	..	..	..	1929	6,200,000	84	17	..	..	..	..
Rumania . . . . .	..	..	..	..	1928	17,900,000	94	19	..	..	..	..
Spain . . . . .	1924	22,100,000	150	34	1927	22,400,000	156	32	..	..	..	..
Sweden . . . . .	1924	6,000,000	265	60	1930	6,100,000	334	69	1936	6,300,000	350	70
Switzerland . . . . .	1924	3,900,000	389	88	1929	4,000,000	449	92	1935	4,200,000	562	115
United States . . . . .	1924	114,900,000	593	134	1929	121,500,000	665	137	1936	128,400,000	497	100
Venezuela . . . . .	..	..	..	..	1929	3,100,000	88	18	..	..	..	..
Yugoslavia . . . . .	1924	12,600,000	109	25	..	..	..	..	..	..	..	..



Table II—Recent Trends in National Income

	1928	1929	1930	1931	1932	1933	1934	1935	1936
In Currency of Each Country (Indexes 1931=100)									
Canada	..	..	126.9	100.0	83.9	83.2	95.6	101.8	113.2
Denmark	98.6	104.2	103.0	100.0	95.8	100.0	108.5	115.4	..
Finland	142.0	132.6	120.3	100.0	100.7	110.1	129.7	136.2	148.6
France	..	107.0	106.1	100.0	90.0	86.9	82.1	75.1	82.5
Great Britain	111.6	112.7	110.3	100.0	98.8	101.9	109.0	117.5	..
Germany	131.1	132.0	122.1	100.0	78.8	80.7	91.5	99.7	107.0
Japan	121.7	..	..	100.0	..	114.2	119.8	124.3	130.5
Norway	..	110.2	110.1	100.0	100.0	95.3	98.0	104.1	114.7
Sweden	..	..	110.5	100.0	94.4	94.4	105.9	115.6	124.1
United States	145.5	151.0	127.0	100.0	73.9	78.2	92.7	102.7	119.3
In Terms of Constant Prices of Each Country (Indexes 1931=100)									
Canada	..	..	105.6	100.0	90.6	89.4	96.3	101.8	109.5
Denmark	73.6	79.0	92.6	100.0	93.1	91.0	91.2	94.7	..
Finland	116.9	113.6	112.3	100.0	94.0	103.9	121.1	127.2	136.3
France	..	85.6	101.0	100.0	105.5	100.3	100.5	111.3	100.7
Great Britain	83.3	80.6	96.8	100.0	101.3	104.3	108.6	115.9	..
Germany	103.9	106.6	108.6	100.0	90.6	95.8	103.2	108.6	114.0
Japan	82.4	..	..	100.0	..	97.4	103.2	102.5	101.0
Norway	..	90.3	98.0	100.0	100.0	95.3	96.5	100.1	104.5
Sweden	..	..	100.6	100.0	96.1	98.0	103.2	110.6	114.8
United States	109.8	115.7	107.3	100.0	83.2	86.4	90.3	93.8	107.8

ices in estimates of the national income. In the United States commodity producing industries contribute only half of the national income as currently measured. There are also differences of opinion concerning the inclusion of income in kind, such as commodities consumed on the farm by farm families, board and lodging furnished domestic servants, or meals supplied to restaurant employees. Certainly the exclusion of farm products consumed on the farm would markedly affect the estimates for agrarian nations. Also, imputed income from owned durable goods, such as houses, is included in some estimates and excluded in others.

Generally, the income figures include only the production of those goods and services which enter into the exchange economy. In countries where a substantial portion of the production takes place within the family unit, the estimates based only on commodities entering into market operations provide very limited comparisons with estimates of other countries. For many of the figures included in Table I it is impossible to ascertain exactly what is included and excluded, since the estimates often represent merely over-all approximations without adequate consideration of the degree of coverage.

**Price Factors.**—Of perhaps equal importance and confusion with the problems of concepts and scope are the qualifications arising out of converting the figures for different countries into the currency of one country and of the effects of differences in costs of living. National income is of necessity measured in terms of money because of the absence of any other unit for evaluating and combining various goods and services. When prices are fluctuating within a relatively narrow range, the dollar income estimates from year to year are valuable indicators of changes in real income. However, when prices fluctuate widely, unless rates of foreign exchange reflect such variations, the conversion of the estimates into dollars or pounds or any other single monetary unit introduces errors. Under a situation where there are no trade barriers and no control over foreign exchange perhaps the exchange rates would vary with price trends or vice versa, but since 1931 the changing gold or silver contents of currencies and numerous restrictions on foreign exchange have rendered almost meaningless the conversion into one currency. Therefore, it is suggested that the figures in the middle or late '20s provide a more satisfactory basis of comparison than do the estimates for recent years.

In addition to the matter of price changes and rates of exchange, it is necessary to add a word of caution in using varying per capita incomes as measures of standards of living. In the United States, per capita incomes are generally lower in the Southern States than in the North and in rural areas than in urban cen-

tres. However, these differences do not measure variations in standards of living, economic status, and general well-being. Life on farms is inherently different from that in cities and cannot be subjected to comparable measurement in terms of dollars. The same is true for different countries. The degree of industrialization and urbanization is, therefore, a significant factor in evaluating the varying per capita incomes.

**Use of the Estimates.**—As previously stated, the estimates presented are derived from a great variety of sources. These figures have been converted into dollars on the basis of average foreign exchange rates for each year and resulting per capita incomes have been obtained by dividing the best available population estimates for each year into the income totals. Figures are not available for all of the countries listed for identical years and, therefore, estimates are presented for three different periods.

In view of all of the qualifications discussed above, the reader might well question the validity of gathering together and presenting such estimates. However, while these qualifications are numerous and substantial, there are certain variations which are so marked and persistent as to allow significant conclusions. Generally, the United States, Great Britain, Canada, Switzerland and Australia appear to fall into a distinctly higher per capita income range than do the other countries and supporting general information also reveals the highest standards of living in these countries. The next income range includes Germany, France, the Netherlands, Denmark and Sweden, which again reflects what one would expect from related evidence. The smaller Central and Southern European countries are in a distinctly lower class. The extremely low income of India is probably indicative, as are those also of China and the balance of Asia. The income estimates of the U.S.S.R. are less subject of conversion into dollars than other countries but occasional dollar estimates during 1920 indicated average incomes in Russia of approximately the same level as the smaller European countries.

The figures in Table II show the recent trends in national income in those countries where continuous data are available. In the lower half of the table, the figures represent the indexes of real income insofar as the wholesale prices used to deflate the monetary incomes are representative of general price changes. Obviously, this is not entirely satisfactory. The low points of the depression and the extent of recovery vary substantially from country to country. When the indexes are adjusted for price changes, it becomes apparent that the recovery in many countries has been a pure price phenomena. Also, in some countries, particularly Great Britain and France, real income continued up throughout the period shown. However, the sensitiveness of the wholesale price indexes probably are at least partially responsible for such results.

(R. R. N.)

**National Insurance.** Industrial workers in Great Britain and Northern Ireland are more fully protected by state action against sickness, unemployment, poverty, and old age than in any other country.

The latest addition to the series of national insurance schemes is the Widows', Orphans' and Old-age Contributory Pensions Act, which operates from Jan. 1, 1938. This scheme includes black-coated workers and others of limited means of both sexes, who were not previously eligible for inclusion within manual workers' schemes. Men contribute 1s. 3d. a week for all benefits, 10d. a week for widows' and orphans' pensions only, and women 6d. for old age and orphans' pensions. Until Jan. 2, 1938, applicants were admitted up to 55 years of age; after that date the age limit for admission is 40, and contributions will be on a sliding scale according to age at entry. The main qualifying conditions for pensions are: for a widow's or orphan's pension—that 104



weeks have elapsed and 104 weekly contributions have been paid since the date of entry into insurance; for old age pension—continuous insurance for 10 years immediately before the age of 65 and payment of 260 weekly contributions. Benefits under this scheme are: widows' pensions of 10s. a week, with 5s. for the eldest child and 3s. for others; orphans' pensions of 7s. 6d. a week, and old age pensions of 10s. a week at the age of 65 for insured men and women and also for the wives of men pensioners at the same age. Income limits for entry to this scheme are £400 a year for men and £250 for women, of which up to £200 and £125 respectively may be unearned. Sir Kingsley Wood, M.P., minister of health, when introducing this scheme in the House of Commons in April 1937, anticipated that 2,000,000 persons would be concerned in this measure.

Hitherto all manual workers and non-manual workers receiving less than £250 a year, unless holding exemption certificates, have been required to take out health, pensions, and unemployment insurances. Now more than 19,000,000 persons are covered by the health and pensions sections.

The state provides part of the cost of benefits and administration of the health and pensions schemes, but the main contributions are from employers and workers. Income and expenditure of these schemes annually is:

Income	£	Expenditure	£
Contributions . . . .	28,000,000	Benefits:	
Interest . . . . .	6,000,000	Sickness . . . . .	10,000,000
Parliamentary Votes .	6,000,000	Medical . . . . .	10,500,000
		Disablement . . . .	6,500,000
		Maternity . . . . .	1,500,000
		Other . . . . .	2,500,000
		Administration . . .	5,500,000
	<hr/> £40,000,000		<hr/> £36,500,000

For the combined health and pensions schemes, men contribute 1s. 8d. weekly and women 1s. 2d.

Benefits include: sickness—men 15s., women, unmarried and widows, 12s., married, 10s. weekly; disablement benefit, men 7s. 6d., women 6s. weekly; maternity benefit, 40s. Sickness benefit may continue for 26 weeks, after which disablement benefit is payable.

**Unemployment Insurance.**—The first experimental unemployment insurance scheme was introduced in the National Insurance Act, 1911, but there was considerable enlargement in 1920, when about 11,000,000 workers were introduced to unemployment insurance.

Now there are two main sections: the general scheme, which covers 14,611,000 workers (July 1937), and the agricultural scheme, in which 600,000 land workers are insured.

Contributions, shared jointly by the State, employer, and worker, are: men 2s. 3d., women 2s., youths (18–21) 2s., and girls (18–21) 1s. 9d. Weekly benefits are: men (21–65) 17s., women 15s., youths 14s., and girls 12s., with additional 9s. for adult dependent, and 3s. for each dependent child.

In the middle of 1934 the accumulated debt of the unemployment insurance fund was funded at £105,780,000 to be repaid at £5,000,000 a year until 1971.

At the same time the unemployment insurance advisory committee, under the chairmanship of Sir William Beveridge, was appointed to advise the minister of labour on variations in the administration and allocation of the fund.

For the past three years rising employment and falling unemployment have resulted in a surplus being accumulated. At the end of 1937 this surplus amounted to £62,000,000; at the end of 1938, according to Sir William Beveridge's estimate, the surplus will be about £82,000,000.

The advisory committee makes its report on the disposal of

this surplus annually. In 1937 the minister adopted the committee's suggestion to reduce from six to three days the number of "waiting days" between the end of employment and qualification for benefit.

Towards the end of 1937 a new unemployment insurance bill was drafted. This proposes to grant to the committee powers to use any part of the fund's balance towards redeeming the debt of approximately £100,000,000 which still remains after the 1934 funding. The committee believes that a substantial repayment of the debt will reduce the annual debt charge of £5,000,000, thus releasing money for improving other conditions of the scheme including benefits.

It is expected that the committee will also consider, before announcing their 1938 recommendations, the evidence of the trade union congress in support of increased benefits to meet the rising cost of living.

Numbers supported by the unemployment insurance fund in recent years (July in each case) were: 1933, 2,508,000; 1934, 2,162,000; 1935, 1,992,000; 1936, 1,660,000; and 1937, 1,443,000. For national insurance in the United States see SOCIAL SECURITY.

**National Labor Relations Act:** see LABOUR ARBITRATION.  
**National Monuments:** see NATIONAL PARKS AND MONUMENTS.

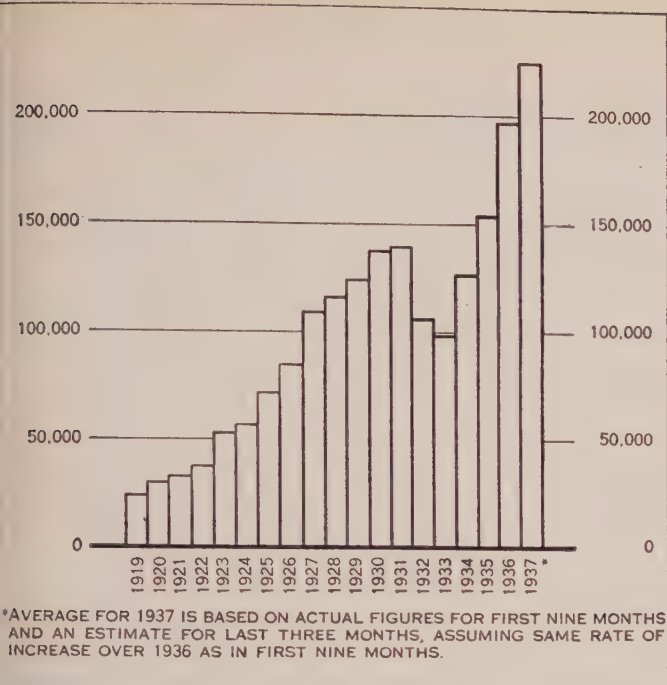
**National Parks and Monuments.** In less than two thirds of a century a system of national parks and monuments undreamed of a century ago in any political economy has been established and developed in the United States.

The Yellowstone, the first national park, was established in March 1872. On Dec. 31, 1937, there were 142 separate areas in the national park and monument system of the United States with a total area of 17,086,671 acres. Twenty-six of these areas are national parks, areas reserved by the Congress because of their superlative scenery or some historic or scientific feature of outstanding national interest. Seventy-four are national monuments, areas established by presidential proclamation under authority of the Congress because of historic, prehistoric, or scientific interest of national calibre. In addition there are two national historical parks, 11 national military parks, eight battlefield sites, eight national memorials of various types, 11 national military cemeteries, one national parkway, and the park system of the



GOATHAUNT, most northerly camp in Glacier National Park





VISITORS TO THE NATIONAL PARKS: monthly average

National Capital, consisting of 694 separate units in and around Washington, D.C.

Congressional authority has been given to the establishment of several additional national parks and monuments when certain conditions outlined in the enabling acts, largely relating to land acquisition without cost to the Federal Government, are met. The Big Bend National park project would include the last wilderness remaining in the State of Texas. In connection with this project, the Government of Mexico is considering establishment of a park on the Mexican side of the international boundary adjoining the Big Bend region, the two forming a proposed international peace park.

The Everglades National park project in Florida would preserve an area unique in the United States in its tropical animal and plant life. The Isle Royale project in Michigan would give national park status to the largest island in Lake Superior. The Cape Hatteras National seashore project, in North Carolina, would establish the first area of this type in the system. Reservation of seashores is designed to prevent disappearance, through development, of all natural beaches. Ten national monument projects also are pending, and several parkways and military park projects.

During the travel year that ended Sept. 30, 1937, the various units of the national park and monument system of the United States were visited by 15,133,432 people. This figure does not include the millions of people who used the facilities of the national capital parks in Washington, D.C. Seven million visitors were recorded in the 26 national parks. The historical and military parks also proved exceedingly popular, showing a growing interest on the part of the people of the United States in their national history. It is the endeavour of the National Park Service, in its development of the historical segment of the park and monument system, to take in such areas of national importance as will tell the connected story of the peoples of the land from the time of the earliest prehistoric cliff dwellings to modern times.

Most of the national park and monument areas are available for use to some extent throughout the year; and many of the wilderness areas now have definite winter sports seasons. Particularly in the parks of the Cascades and High Sierra of the Pacific coast country there is unexcelled terrain for skiing.

Establishment of national parks throughout the world grew out of the example set when the Yellowstone was reserved "as a public park or pleasuring-ground for the benefit and enjoyment of the people," to quote from the act establishing it.

There are now national parks or national monuments on every continent, and in many nations throughout the world, extending from neighbouring countries in the Americas to far-off Africa.

(A. B. CA.)

**National Socialism** is the political creed (*Weltanschauung*) of Adolf Hitler's National Socialist party and the basis since 1933 of the totalitarian state of the "Third Reich." It is predicated on a racialism which aims to restore Germany to the rank of a first-rate power after the humiliations of the Versailles Treaty and after what is regarded by its advocates as the weak and corrupt "system" of the Weimar Republic from 1919 to 1933. Its doctrines are expressed in the Twenty-five Point Program of 1920, in Hitler's book, *My Battle* (*Mein Kampf*, 1925-26), and in his later speeches and decrees.

The Twenty-five Point Program of 1920 demanded: (1) the union of members of the German folk into a greater Germany; (2) the equality of the German folk with other nations, and the annulment of the Versailles and St. Germain Treaties; (3) land and soil (colonies) for the nourishment and settlement of Germany's excess population; (4) German citizenship to be limited to Folk Comrades, *i.e.*, persons of German blood, thereby excluding Jews; (5) non-citizens to be merely "guests" under special laws; (6) office-holding to be limited to citizens, and an end to the corrupting parliamentary system; (7) provision by the State for the unemployed; (8) prohibition of all further immigration of non-Germans, and immediate expulsion of all non-Germans (*i.e.*, Jews) who migrated into Germany after Aug. 2, 1914; (9) all citizens to enjoy equal rights and duties; (10) the first duty of every citizen is to be spiritually or physically productive; (11) abolition of unearned incomes, *i.e.*, the "breaking of the thralldom of interest"; (12) abolition of gains from war-profiteering; (13) nationalization of all industrial trusts; (14) generous provision for the aged; (15) profit-sharing in big business; (16) creation of a sound middle-class and immediate communalization of big department stores and their leasing on moderate terms to small concerns; (17) agricultural reform, including the expropriation of land without compensation for public welfare purposes, the abolition of land-rent, and the prevention of all speculation in land; (18) vigorous war against all those who injure the common welfare, with death for traitors, usurers and profiteers without regard to religion or race; (19) substitution of German Common Law for materialistic Roman Law; (20) free education for all gifted children and early inculcation of the conception of the State; (21) care by the State for the health of the folk through protection of mothers and children, through prohibition of child labour, through development of sports, and through support of all youth athletic organizations; (22) abolition of the professional paid army and creation of a folk army; (23) war on deliberate political lies and their circulation through the press, by provisions that all editors of German newspapers must be of German blood and that non-German papers must have the special permission of the State; (24) freedom for all religious confessions so far as they do not offend the moral feelings of the German race; the party stands for "positive Christianity" and opposes the Jewish-materialistic spirit; (25) the creation of a strong central Government in order to realize the principle, "the common good before the individual good" (*Gemeinnutz vor Eigennutz*). Although this program was declared "unalterable," a number of points have been tacitly more or less abandoned (*e.g.*, points 11-13 and 15-17, virtually calling for the abolition of the rule of capitalism), and



two (1 and 3) are still balked by international settlements. The rest of the program (except to some extent points 14, 15, 18, 23, and 24) has, however, been largely achieved. (See BROWN SHIRTS; GERMANY; GOEBBELS, JOSEF; GÖRING, HERMANN WILHELM; HITLER, ADOLF.) (S. B. F.)

## National Trust and Ancient Monuments.

The passing of the National Trust Act, 1937, in England was important for the National Trust for Places of Historic Interest or Natural Beauty. This Act extended the powers of the trust to hold properties as investments, using rents for trust purposes, and extended the purposes of the trust to include the preservation of buildings, etc., of national, architectural, historic, or artistic interest, the protection and augmentation of the amenities of such buildings, etc., and their surroundings, the preservation of furniture, pictures, and chattels having a similar interest, and the access to and enjoyment of such by the public.

A notable acquisition was the "George" inn, Southwark. Built in 1677 on the site of an older inn in whose yard Shakespeare played, the "George" is the last galleried inn in London. The ruins of Hayles Abbey, Gloucestershire, a Cistercian abbey founded in 1246, were presented in memory of Mr. and Mrs. Hugh Andrews. Other buildings acquired include the remains of a pilgrims' chapel at Dorking, Surrey, a 16th-century Flemish stone house at Tenby, Pembrokeshire, and houses with their lands in Ireland.

The Calf of Man, a 615ac. island off the Isle of Man, is to be a bird sanctuary, as is part of Groveley estate, near Birmingham, devised in memory of Major Baldwin, while the house is to be a home for poor gentlefolk. Nature reserves added to were Wicken Fen, Cambridgeshire, and Scolt Head, Norfolk. Strips of coast in Devon, Cornwall, and Pembrokeshire, woodlands in Oxfordshire, downland and hills in Gloucestershire and Surrey, were also acquired by the trust. The Scottish National Trust has acquired the Pass of Glencoe.

**Ancient Monuments.**—The preservation of ancient monuments and historic buildings in Great Britain is largely undertaken by His Majesty's Office of Works.

Work done in 1937 on prehistoric monuments included Grime's caves, an extensive Stone Age flint mine in Norfolk. Dr. Mortimer Wheeler made important discoveries while excavating Maiden Castle, Dorset. The Office of Works set up fallen stones of the circles known as "The Hurlers," Cornwall, and excavated early sites in the Orkneys. With the National Trust, the Office of Works prepared a scheme for the preservation of the Avebury monuments and their surroundings. Efforts are being made to raise the necessary money. The monuments consist of a great earthen circle with stone circles and a great avenue of stones going down to West Kennett.

**BIBLIOGRAPHY.**—J. Dixon Scott, *England under Trust* (London, 1937); Clough Williams-Ellis, *Britain and the Beast* (London, 1937). (V. R.)

**National Wealth:** see WEALTH AND INCOME, DISTRIBUTION OF.

**Natural Gas.** Production of natural gas in the United States suffered only a comparatively small reduction during the depression years, dropping from 1,943 billion cu. ft., in 1930 to 1,556 billion in 1933, and recovering to approximately the former level in 1935; in 1936 production reached 2,175 billion cu. ft., of which 30% was used in the field, 49% for industrial and 21% for domestic consumption. The largest item of industrial use is the production of carbon black, which took 13% of the total output.

The fact that much of the gas is produced from oil wells in remote regions where the consumption demand is small has led to much wastage; some 25 years ago it was estimated that the wastage was about equal to the consumed output, but since then this proportion has been much reduced, chiefly through more economical methods of handling, pumping the excess back into the ground for storage or re-pressuring the well, and most of all, by the construction of distribution lines to carry the gas to consumption centres far removed from the point of production. About one-quarter of the present consumption is now carried through long-distance pipe lines; some of the more striking ones are a line from the Texas panhandle to Detroit, Mich., and intermediate points, and one from Kentucky to Washington, D.C. (G. A. Ro.)

**Natural History Museums.** In 1937 many signs pointed to a gradual transformation of natural history museums by which they may become fully accredited parts of the educational system in every civilized country. They always have been adjuncts to general education and always have had a basic, vital relation to scientific research; but it is only recently that they have reached out to a broad public which by quick response has stimulated them to greater effort. The change began scarcely more than 30 years ago with the improved techniques centring around the so-called "habitat group." With its combination of art and nature in exquisite reproductions of both animals and plants, this introduced a new feature which by sheer beauty attracted a larger public and larger financial support. The habitat group has come to stay, but its heyday is passing and not improbably it will prove to be a link between the museum of the past, which was mainly objective, and the one of the future, which will doubtless be much more subjective.

The spread and growth of museums has continued. New museums are being established in small or medium-sized communities and old ones are being expanded everywhere. Museums to meet special conditions also have multiplied. Such are the "trailside" museums and the park museums. A highly specialized museum is a Speleological museum planned in Cragdale Settlement, England. In State and national parks there are now more than 50 special museums in various parts of the United States. A unique and stupendous undertaking under museum auspices is the Dinosaur National Monument in Utah where the remains of huge, extinct reptiles are to be shown *in situ*.

In the British Empire, museums have been greatly stimulated by the Carnegie United Kingdom Trustees administering funds provided by the Carnegie Corporation. Beginning in 1931, they have not only fostered study of museum methods throughout the world, but also have judiciously allotted grants in relatively small amounts for many specific purposes. Such grants have put new life into many a museum, have awakened it to new possibilities, and have placed it in a new light within its community.

The growth of museums in Soviet Russia has been phenomenal and but little known to the rest of the world. According to an authoritative report there are now at least 738 Soviet museums as against only 115 before the revolution. The number in Moscow has increased from 47 to 129. Not all are natural history museums, but those wholly or partly devoted to natural science constitute 51% of the total as compared to a former 8.8%. Many are so-called museums for regional study, closely connected with the schools, and definitely anti-religious in outlook.

In changing from a somewhat static but assured existence to a dynamic one with large future potentialities, museums are encountering many problems. Co-operative movements and numerous museums associations are attacking these problems. At the meeting of the British Museums Association in 1937 the



rector of the American Association was present to deliver an address and offer exchange of ideas. An exhaustive treatise on museum methods came from Germany and the Scottish Federation of Museums held its first meeting in October 1937. Japan is a flourishing association and there is even one in China which entered its second year in 1937.

Under the new conditions, the responsibilities of large, long-established museums have reached proportions taxing their capacity. Such museums are called upon both for elementary popular science and for advancement of knowledge. Some help is obtained by close contacts with universities, but it is evident that the museums, with their relatively small staffs, are at a disadvantage. The type of research for which museums are especially fitted is obviously in need of special endowment. The small museum can limit its field and lean upon the large one in many ways, but the large one must carry on all its earlier functions as well as the new ones. To do this, it must enlarge its personnel and recognize new professional status to meet new conditions. It has always been self-evident that a museum is no better than its curators. Today, as one writer has said, "the curator must be not only a man of science in the widest sense, but a man of action." Such requirements are not easily met and it is often necessary to sacrifice science for action and vice versa. Given the means, men for science and others for action might find their places, but some degree of compromise seems inevitable. It is not strange, however, that more than one supposedly rich institution is campaigning for new endowment.

Museums have been quick to utilize the radio, especially those with large staffs able to speak authoritatively and to command public attention. In London, the Natural History Museum has conducted programs in co-operation with the British Broadcasting Corporation and the Central Council on school broadcasting. The American Museum of New York and the Smithsonian Institution in Washington have done much broadcasting. The former recently had a series called "This Wonderful World," offering prizes and featuring questions and answers on natural history subjects. The Field Museum of Chicago, for several months during the summer of 1937, conducted weekly broadcasts in which museum activities, especially expeditions were dramatized. (W. H. O.)

**Auru:** see PACIFIC ISLANDS, MANDATED.

**Naval Conferences:** see LONDON NAVAL CONFERENCES.

**Naval Limitations Conference:** see LONDON NAVAL CONFERENCES.

## Navies of the World.

At the end of 1937 every navy of importance in the world was taking measures to increase its strength. Though this applies more particularly to the seven principal Powers—the United States of America, the British Empire, Japan, France, Italy, Germany, and Russia—it holds good also for most of the minor ones.

All seven of the above Powers are building new capital ships, a fact which goes far to discount exaggerated claims by air enthusiasts as to the ability of air forces to influence naval strategy. As far as details of the designs of these new capital ships have been published, certain features appear to be common to all; displacement is largely owing to the standard displacement of 35,000 tons having been more or less generally adopted. On this displacement, possibilities in the way of novelty in design are strictly limited, if adequate protection, reasonably high speed, and good sea-keeping qualities are to be obtained.

The aircraft carrier, whose relative vulnerability caused some critics to assume that its day was done, figures in the building programs of all the above Powers with the exception of Italy; and it would not be surprising if the Italian Naval Staff were to

arrive at the conclusion that aircraft carriers will be needed in the future.

Torpedo tubes as part of the armament of capital ships, or of heavy cruisers, have fallen out of favour. Not only are they excluded from all the designs of new capital ships so far published, but they are being removed from many of the capital ships, and heavy cruisers that have been taken in hand for refit or reconstruction.

Increased deck protection against plunging fire or air bombs is a feature found in all the new designs of capital ships and heavy cruisers, in combination with enhanced anti-aircraft armament and the addition of aircraft and catapults to their equipment. With higher steam pressures and boilers of improved design, space and weight have been made available for these additions, which would have been difficult to provide otherwise.

Efforts to abolish the submarine as a weapon of war have been utterly fruitless, and more submarines are now under construction than ever before. Another type of warship which is being built in large numbers is the motor torpedo boat, the value of which for coastal operations was proved in 1918-19, though for many years the type was neglected in nearly every navy. One of its attractions is that it can be built quickly and cheaply.

Destroyers have altered less than any category of warship since the Armistice; but even here, increased steam pressures and modified boiler design have enabled certain improvements to be made. Of late, there has been a tendency in several navies to reduce the number of funnels to one; instances of this will be found in the United States, British, Italian, and Polish fleets.

**United States.**—After a quiet period, the United States Navy is also beginning to expand again. Its strength at the end of 1937 included: 15 battleships; 3 aircraft carriers; 17 cruisers with 8-in. guns; 12 cruisers with 6-in. guns; 196 destroyers; 84 submarines; 11 gunboats; 33 patrol vessels; 3 aircraft tenders; 10 minelayers; and 43 minesweepers. Under construction, or to be begun early in 1938, were: 4 battleships; 3 aircraft carriers; 8 cruisers; 38 destroyers; 22 submarines; 1 aircraft tender; and 2 motor torpedo boats, the first to be built for the U.S. Navy. The total personnel amounts to 119,992.

**Great Britain.**—During the period covered by the currency of the Washington Treaty of 1922 and the London Treaty of 1930, British naval strength declined sharply, both in material and personnel. This fact was not fully realized by the nation at large until it was brought home to the public by the Abyssinian crisis of 1935. Since that date large and increasing programs have been introduced each year, a course rendered possible by the automatic termination of the two treaties already referred to at the end of 1936.

At the end of 1937 the British Fleet comprised the following warships: 12 battleships; 3 battle cruisers; 15 heavy cruisers, mounting 8-in. guns; 42 cruisers with 6-in. guns; 2 anti-aircraft cruisers; 1 cruiser-minelayer; 5 aircraft carriers; 162 destroyers; 52 submarines; 33 escort vessels; 33 minesweepers; 6 patrol vessels; 3 aircraft tenders; 2 netlayers; 18 river gunboats; 5 coastal minelayers; 10 motor torpedo boats; and 3 monitors. In addition, there were under construction or authorized: 5 battleships; 17 cruisers; 5 aircraft carriers; 40 destroyers; 18 submarines; 4 escort vessels; 7 minesweepers; 5 patrol vessels; 3 river gunboats; 2 coastal minelayers; and 13 motor torpedo boats. It will be appreciated from this that a very large expansion of material strength is in progress, though the more important units will not be ready until 1940-41. To man the additional tonnage under construction, corresponding increase is being effected in the numbers of officers and men, largely by entering cadets and boys, but also by direct entry of officers from the Royal Naval Reserve and of men from civil life. The 1937 navy estimates provided for



a total personnel of 112,000, as compared with the low-water mark of 90,300 touched in 1933. At the outbreak of the World War in 1914 this total was 151,000.

A number of the British Dominions overseas maintain local naval forces. These include the Royal Indian Navy, with 5 escort vessels, a patrol vessel, and some minor craft; the Royal Australian Navy, with 4 cruisers, a flotilla leader, 4 destroyers, 2 escort vessels, a seaplane carrier, and 4 other ships; and the Royal Canadian Navy, with 4 destroyers, and 4 vessels of less importance. For comparative purposes ships of these navies have been incorporated in the total strength of the British Empire's fleet, summarized in the preceding paragraph.

The Dominion of New Zealand maintains two or three small craft for training its naval personnel. Two cruisers are lent to the Dominion from the Royal Navy, in addition to a couple of escort vessels stationed in New Zealand waters.

**Japan.**—Third in strength of the great naval Powers, Japan also enjoys a unique geographical position, which adds greatly to the strategical value of her fleet. Its strength at the end of 1937 included: 9 battleships, together with a demilitarized battleship which it has been proposed to rearm; 5 aircraft carriers; 12 cruisers with 8-in. guns; 23 cruisers with 6-in. guns; 5 old cruisers rated as coast defence ships; 105 destroyers; 12 torpedo boats; 3 submarine chasers; 60 submarines; 3 aircraft tenders; 11 minelayers, and 9 gunboats. Full information as to ships under construction in Japan is not available, but it is believed that three battleships, armed with 16-in. guns, were put in hand at the end of 1937. Otherwise there are known to be building: 1 aircraft carrier; 2 cruisers; 10 destroyers; 8 torpedo boats; 3 submarine chasers; 2 submarines; and 2 aircraft tenders. Probably the actual numbers under construction are greater than these figures. The total personnel amounts to 107,000.

**France.**—At the end of the World War French naval strength had declined appreciably compared with that of most of her allies. But of late years determined efforts have been made to regain lost ground, and the French Navy now includes: 6 battleships; 1 aircraft carrier; 7 cruisers with 8-in. guns; 12 cruisers with guns of lighter calibre; 60 destroyers, many of which are of between 2,000 and 3,000 tons displacement, virtually small cruisers, in fact; 11 torpedo boats; 75 submarines; 2 minelayers; 1 netlayer; 1 aircraft tender; 44 escort and patrol vessels; 4 minesweepers; 13 submarine chasers; 9 river gunboats. Under construction or to be laid down shortly are: 3 battleships; 2 cruisers; 16 destroyers; 6 torpedo boats; 16 submarines; 4 aircraft tenders; 19 escort and patrol vessels; 18 submarine chasers; and 1 river gunboat. Of late the rate of construction has slowed down considerably, and some ships have been completed long after their due dates. The total personnel is 69,500.

**Italy.**—With the Fascist régime the Royal Italian Navy has undergone a combined process of expansion and renovation. It now includes: 4 battleships of pre-War construction, 2 of which have been completely rebuilt, while the other 2 are being similarly dealt with; 7 cruisers mounting 8-in. guns; 15 cruisers with lighter weapons; 1 obsolete cruiser used for training purposes; 64 destroyers; 60 torpedo boats; 86 submarines; about 100 motor torpedo boats; 1 escort vessel; 1 aircraft tender; 15 minelayers; 38 minesweepers; 14 gunboats; and 5 monitors. There are under construction 4 battleships of 35,000 tons; 24 destroyers; 16 torpedo boats; 20 motor torpedo boats; and 20 submarines. More submarines and small craft will be begun in 1938. It will be observed that the tendency is to build torpedo craft and submarines in large numbers, and it will not be long before Italy leads the world in the number of these vessels, though at the moment Russia probably holds that distinction. The personnel numbers 67,803.

**Germany.**—Since Germany decided to depart from the restrictions imposed by the Treaty of Versailles, the expansion of her Navy has been spectacular in its rapidity. It now includes the following warships, almost all built within the past few years: 3 armoured ships, the so-called "pocket battleships," which are actually big armoured cruisers of an exceptionally powerful type; 6 cruisers; 8 destroyers; 18 torpedo boats; 14 motor torpedo boats; 36 submarines; 2 gunnery training ships; 10 patrol vessels; and 23 minesweepers. Either under construction or to be laid down early in 1938 are: 5 battleships; 2 aircraft carriers; 2 cruisers armed with 8-in. guns; 4 cruisers with 5.9-in. guns; 12 destroyers; 18 torpedo boats; 6 motor torpedo boats; 25 submarines; and 24 minesweepers. Equally rapid has been the increase in personnel, which in 1937 totalled 46,600. A very large proportion of this total must still be under training.

**Russia.**—Exact information about the Soviet Navy is very hard to obtain, but the figures given here are as trustworthy as can be procured. The strength in completed ships is believed to be: 3 battleships, of an old type; 3 modern cruisers and 2 old ones used for training; 1 cruiser-minelayer; 20 destroyers; 18 torpedo boats; 130 motor torpedo boats; 113 submarines; and a large but somewhat uncertain number of small minelayers and minesweepers. Under construction are: an aircraft carrier, at least 2 cruisers, 5 or more big destroyers, about 36 submarines, and a number of motor torpedo boats. In 1938 it is intended to start the construction of one or more battleships. The total personnel is not known, but was reported some time ago at 23,600; it has since been increased.

It may be asked, why are all the great nations increasing their naval armaments? Except in the cases of France and Germany and Germany and Russia, it is not a matter of direct competition. Nowadays no thinking person in either the United States or Britain seriously regards the other country in the light of a possible opponent, since the ideals of both are similar, and it is hard to envisage any disagreement serious enough to bring armament into question. But in nearly every country there is a growing sense of insecurity owing to the troubled state of world politics which has led to a universal demand for stronger defences.

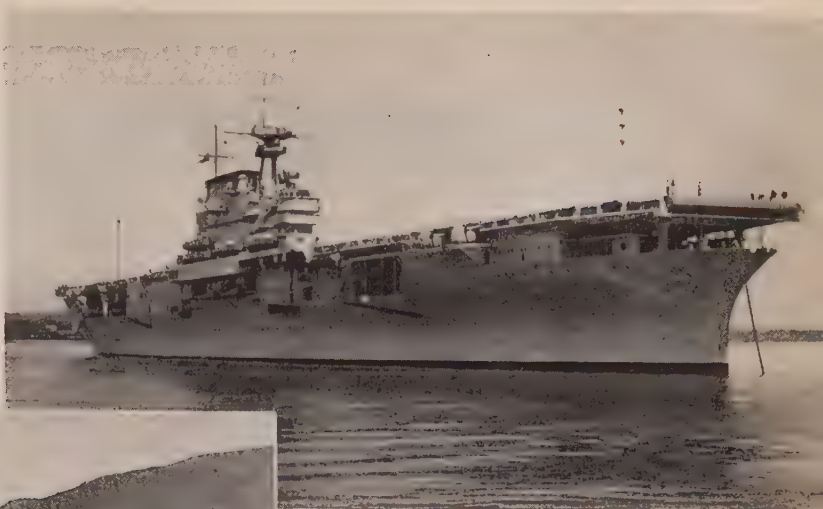
That this is so is proved by the attitude of the smaller countries. The Netherlands, a peace-loving nation which is not easily stirred, has embarked on its biggest naval program for many years. Its existing fleet comprises: 3 cruisers; 2 old coast defence ships; 8 destroyers; a dozen old torpedo boats; 22 submarines; 3 escort vessels; 10 minelayers; and 16 minesweepers. There are under construction, or to be built immediately: 2 cruisers; 4 destroyers; 9 submarines; a gunnery training ship; 3 escort vessels; a minelayer; and a number of motor torpedo boats. Concern is felt for the safety of the vast Dutch possessions in the East Indies, which, it is felt, are but inadequately protected by the existing fleet.

The Scandinavian countries are fully as peace-loving as the Netherlands, and are not easily disturbed by wars and rumours of wars. But the Swedish commander-in-chief has recommended quite a formidable program to Parliament, for the construction 1938-43, of three 8,000-ton armoured cruisers; 4 torpedo boats; 3 submarines with a parent ship; and 12 motor torpedo boats. This is a big increase on the present fleet of 2 cruisers; 8 coast defence ships; 14 destroyers; 16 submarines; 6 minesweepers; and 7 motor torpedo boats. It is possibly the growing strength of the German and Russian Navies that Sweden fears, but general uneasiness at the world situation is probably an equally contributory cause.

Norway has not yet introduced any fresh program, but it is only a question of time before the increasing number of advocates of rearmament in that country will find their demand met. At present



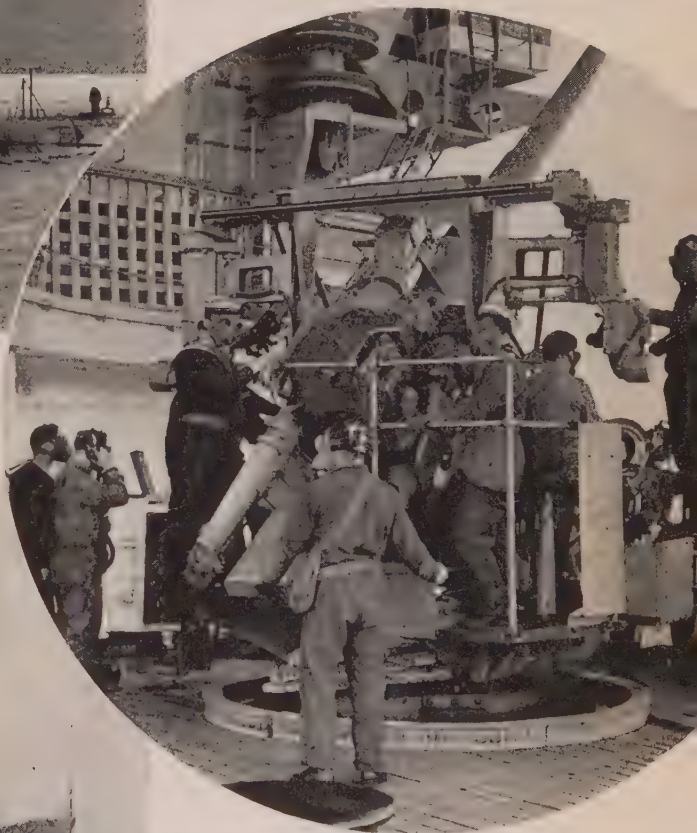
U.S. aircraft carrier "YORKTOWN," commissioned Sept. 30, 1937



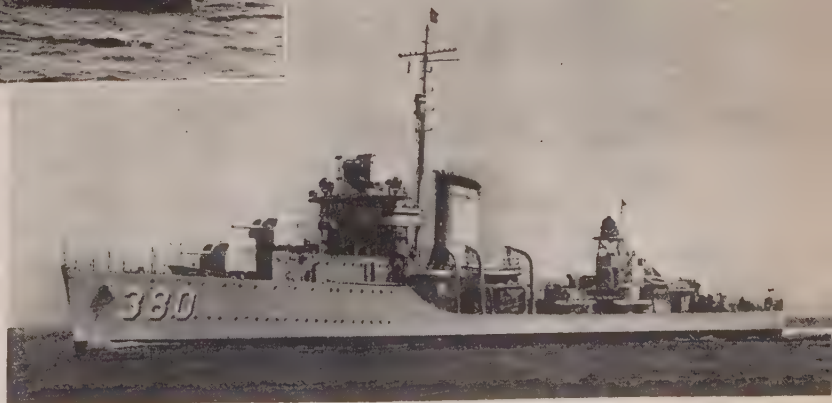
The "POMPANO," U.S. Navy submarine, commissioned June 12, 1937



ANTI-AIRCRAFT GUN in action on board H.M.S. "Courageous"



Heavy cruiser "VINCENNES," U.S. Navy, commissioned Feb. 24, 1937



The "GRIDLEY HULL," U.S. destroyer, commissioned June 24, 1937



ent the fleet includes: 4 coast defence ironclads; 21 torpedo boats; 9 submarines; and 4 minelayers, the majority being old ships. Four torpedo boats and two minesweepers are building or authorized.

Denmark is at much the same stage as Norway. To a fleet of 2 coast defence ships, 20 torpedo boats, and 8 submarines, there will soon be added a minelayer; 3 submarines; and 3 minesweepers.

As a new country, Finland has a small but modern fleet, which comprises: 2 coast defence ships; 5 submarines; and 4 gunboats, besides smaller craft, such as motor torpedo boats and coastal minesweepers. A new construction program is at present under consideration.

Poland, another new country, is steadily building up a navy of considerable importance. It now includes: 4 destroyers; 3 submarines; 5 torpedo boats; 2 gunboats and 4 minesweepers. A minelayer and two submarines are building, and it has been proposed that an extensive program, to include capital ships and cruisers, shall be put in hand in the near future.

The Estonian Navy is small but quite efficient. It includes: 2 submarines; a torpedo boat; 4 minelayers; and a number of smaller craft. It is intended to add a flotilla of motor torpedo boats to the fleet next year. Latvia's force of 2 submarines, 2 minesweepers, and a gunboat is still smaller, while Lithuania has only a single patrol vessel. Both these countries are discussing extensions of their naval forces.

In the south of Europe, the Spanish Navy is divided into two opposing sections. Disregarding this, there are: 7 cruisers; an old battleship which is at present completely disabled; 15 destroyers; 11 torpedo boats; 11 submarines; 2 minelayers; 5 gunboats; and many smaller vessels. Two destroyers, three submarines, and four minelayers are under construction.

Portugal has a small but highly efficient fleet, which has been modernized in recent years. There are: 6 destroyers; 8 escort vessels; 2 torpedo boats; 3 submarines; and 3 gunboats. A new program is being framed in 1938 with the help of British naval advice.

Greece possesses an old armoured cruiser; a cruiser-minelayer; 8 destroyers; 13 torpedo boats; 6 submarines; 4 small minelayers; and 2 motor torpedo boats. Two destroyers are under construction in British yards, and 10 more destroyers and 2 submarines are to be begun within the next two or three years.

Turkey's biggest ship is still the "Yavuz," formerly the German battle cruiser "Goeben," which was modernized a few years ago. There are: 4 destroyers; 5 submarines; 2 old cruisers; 11 motor torpedo boats; and sundry vessels of less importance. Under construction are: 4 submarines, and a number of motor torpedo boats, while 2 cruisers and 4 destroyers are projected.

Rumania has 4 destroyers, a submarine, 3 old torpedo boats, and some minor war vessels. Additions to this force are at present under consideration. Bulgaria has nothing but 4 small torpedo boats of an obsolete type.

The Royal Yugoslav Navy is a growing force, with the flotilla leader "Dubrovnik" as its flagship. There are: 4 submarines; 6 torpedo boats; 10 motor torpedo boats; an old cruiser; an aircraft tender; and 11 minelayers, while 3 destroyers are under construction.

**South America.**—In South America, after a long period of quiescence, there is a general disposition to bring fleets up to date in conformity with the world impulse already noticed.

The Argentine Navy at present comprises: 2 battleships; 2 cruisers; 4 coast defence ships; 9 destroyers; 3 submarines; and 10 patrol vessels. Under construction in England are a cruiser and 7 destroyers, while 7 patrol vessels are being built in Argentine yards—quite a new departure.

Brazil is also taking steps to increase her navy. To the existing force, which includes 2 battleships, 2 cruisers, 8 destroyers, and 4 submarines, there are being added 9 destroyers, 6 of which will be built in England, and 6 minelayers which, like the other 3 ships, are under construction in Brazil. Both battleships are being reconstructed.

Chile, which in the efficiency of its fleet has always taken a very high place, recently obtained tenders for the construction of two new cruisers. Otherwise her navy consists of a battleship, the "Almirante Latorre," which fought in the British Grand Fleet during the World War as H.M.S. "Canada"; 3 cruisers, a coast defence ship, 8 destroyers, and 9 submarines. Financial conditions alone have hindered the earlier renewal of the Chilean fleet.

Peru possesses 2 cruisers, 2 destroyers, 4 submarines, and a torpedo boat. Frequent changes of Government have hitherto prevented new programs of construction from getting beyond the paper stage. In the case of Ecuador, a similar situation prevails, except that the whole fleet at the moment consists of the gunboat "Presidente Alfaro."

Colombia has recently built up a small but efficient navy with the aid of British officers and instructors, there being 2 destroyers, a minesweeper, and a number of gunboats and patrol vessels. Venezuela possesses half-a-dozen gunboats; Uruguay, 3 patrol vessels, and several other small craft; and Paraguay, 4 river gunboats.

Farther north, Mexico can dispose of 5 modern escort vessels and 2 old ones, a coast defence ship, 10 gunboats, and 4 patrol vessels. Cuba has 2 escort vessels, recently rebuilt; 5 gunboats, and 7 patrol vessels. Haiti has 2 little patrol vessels.

One of the outstanding features of these South American, Central American, and West Indian Navies is that, with the exception of Argentina and Brazil—and those to a limited extent—none can build ships at home, so that orders have to be placed abroad.

This also applies to three Eastern Navies, the existence of which is sometimes almost forgotten. Two have built up new fleets under the tutelage of Japan, and the third is doing the same under the guidance of Italy.

The Navy of Manchoukuo, though mainly a river force, includes 15 gunboats, all but 5 of which are modern vessels built in Japan, as are 6 patrol vessels which are also included in the fleet. A destroyer and several other vessels of less importance exist, though full particulars of these are not available.

Though little advertised, the recent rapid expansion of the Royal Siamese Navy is a remarkable feature for which no obvious explanation is forthcoming. It has more than trebled its strength in a little over two years, and now comprises: 2 coast defence ships built and 2 building; a destroyer; 18 torpedo boats and 4 submarines; 2 escort vessels; 3 gunboats built and 2 building; 2 or 3 minelayers; and 8 motor torpedo boats. With the exception of the minelayers and 10 torpedo boats, which were built in Italy, the whole of the new construction has been undertaken in Japan.

Iran is the third country to develop, under foreign inspiration, a navy from next to nothing. In the place of one or two old vessels of no fighting value, the Imperial Iranian Navy now includes: 7 gunboats, half a dozen motor torpedo boats, and one or two ancillary vessels. Personnel for these ships, as in the case of Siam and Manchoukuo, has been trained under officers from the country supplying the ships—in this case, Italy.

Iraq, the neighbour of Iran, has begun to build up a little navy, its nucleus having been formed with 4 patrol vessels, a yacht, and a tug, all British built.

Of the Chinese Navy it is difficult to say anything at the moment, since it has suffered heavily from the onslaught of Japan.



Before hostilities began, its force was considerable, including: 8 cruisers, an escort vessel, over 20 gunboats, 6 old torpedo boats and 10 of the modern motor type, 16 river gunboats and patrol vessels, and a couple of small seaplane carriers. Several of these ships have been sunk, or, in the case of a comparatively new cruiser, the "Ning Hai," taken possession of by the Japanese forces. This is no reflection on the bravery or efficiency of the Chinese personnel, which was completely overwhelmed by superior strength.

Until the issue of the present struggle in the Far East is finally determined, it is hard to forecast the future of the Chinese Navy; but if an independent Chinese Government survives, it may be taken as a certainty that a new fleet will in due course be provided.

There are of course several countries whose naval forces are either non-existent at present or of too small importance to be worth counting in world affairs. Czechoslovakia, Austria, and Hungary all maintain river forces with semi-military personnel, which are navies in a sense. In the case of Czechoslovakia the strength of this force has been more than doubled recently, a significant commentary on the unsettled state of Central Europe at the present time. Austria actually went to the length of disbanding its force and selling the ships some years ago, but has since reconsidered matters and reconstituted it with fresh craft.

That for some years to come the development of the world's navies will provide a steady source of income for shipyards and a subject for discussion everywhere seems to be certain. That it will lead to another World War by no means follows, for it is a characteristic of naval armaments that, provided the preponderance of strength lies in the hands of peace-loving countries, they can be used to the greatest advantage as a means to restrain aggression. (See also MUNITIONS OF WAR; WARFARE; WORLD ARMAMENTS.) (F. E. McM.)

**Navy Department:** see GOVERNMENT DEPARTMENTS AND BUREAUS.

**Nazis**, a popular and convenient but slightly derogatory abbreviation for members of the National Socialist party led by Adolf Hitler since 1920. According to some writers it arose during the early days of the party as a derisive nickname from a local Bavarian slang expression meaning mountain country-bumpkin or "hill-billy." More probably it arose from the German pronunciation of the first two syllables (*Nati*) of its long official name—*National sozialistische Deutsche Arbeiterpartei* (National Socialist German Workers' party), just as the members of the Social Democratic party used to be known as *Socis*. The official abbreviation, commonly used by German writers is "NSDAP," these being the initial letters of the five combined words of its full name. (See BROWN SHIRTS; DANZIG; GERMANY; NATIONAL SOCIALISM.) (S. B. F.)

**Nebraska**, one of the States formed from the Louisiana Purchase; area, 76,808sq.mi.; population, 1930, 1,377,963, estimated July 1, 1937, 1,364,000; capital, Lincoln, 75,933. The largest city is Omaha, 214,006. In 1930, 54.9% of the population was urban; 1,353,702 were white, 13,752 coloured, 1,262,517 native-born and 115,346 foreign-born.

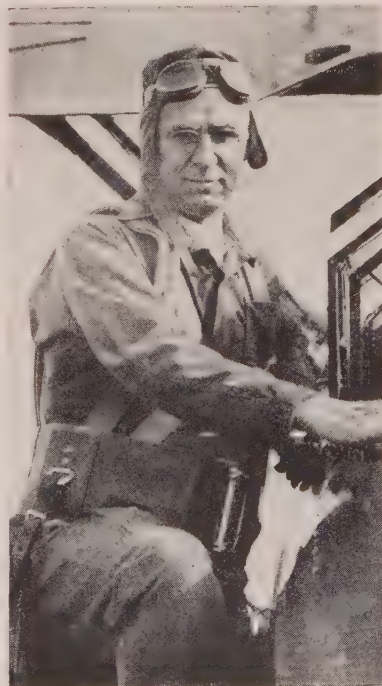
**History and Government.**—The executive power is vested in the governor and eight other administrative officers. The governor prepares the biennial budget, has a considerable appointing power, and a veto power which extends to items in appropriation bills. The principal State officers for 1937-39 were Governor, R. L. Cochran; Lieutenant-Governor, Walter H. Jurgenson; Auditor, William H. Price; Secretary of State, Harry R. Swanson;

Treasurer, Walter H. Jensen; Attorney-General, Richard C. Hunter; Superintendent of Public Instruction, Charles W. Taylor. The legislative power is vested in a single chamber of 43 members, known as the Senate. Senators are elected for single-member districts on a non-partisan ballot for a term of two years. The lieutenant-governor is the presiding officer, though a speaker acts in his absence. Regular sessions are biennial in the odd-numbered years, though special sessions may be called either by the governor or by two-thirds of the membership. The judiciary consists of justice, police, municipal and county courts in the localities and of 18 district courts and a supreme court of seven members. The county courts are engaged primarily in probate work. All judges are popularly-elected, county and district judges for four years and supreme court judges for six years.

**Education.**—Higher education is supported by the State at the University of Nebraska and in four teachers' colleges. The State university consists of ten colleges and three schools of collegiate grade. The total enrolment for 1936-37 exceeded 10,000 of whom more than 6,500 were resident students of collegiate rank. Property and equipment are valued at \$11,700,000 and the biennial appropriation for 1937-39 was \$6,773,762 (including Federal grants). The management of the university is vested in an elective board of regents. The four teachers' colleges offer collegiate training for four years leading to a bachelor's degree. The total enrolment in 1936 was 5,678 and the faculties number 226. Control is vested in a board of seven members. Elementary and secondary education is in the hands of local school districts of which there are now more than 7,000 in the State. Financial support is derived almost wholly from the local tax on property. The total enrolment in 1936 was 307,975 and the number of teachers employed was 17,519. School property was valued at \$82,145,727, school expenditures were \$17,175,354 and school indebtedness amounted to \$29,829,857.

**Charities and Corrections.**—The dependent, delinquent and defective classes are cared for in 18 institutions under the supervision of the State Board of Control. In addition to the penitentiary and reformatories for men and women, there are industrial schools for boys and girls, hospitals for the blind, the deaf and the feeble-minded, three hospitals for the insane, two homes for soldiers and sailors, an orthopaedic hospital and a home for dependent children. The total institutional population in 1937 was 8,942 and the legislative appropriation, \$4,832,222. In addition there is an appropriation to the State assistance fund for the biennium 1937-39 of more than \$7,000,000. This fund is administered by a State assistance director in co-operation with the county boards.

**Banking and Finance.**—State banks under the supervision of the State banking department numbered 296 on June 30, 1937—a decrease from 415 in 1933. These banks have resources of \$82,748,259. There were also



ROBERT LE ROY COCHRAN, governor of Nebraska



76 building and loan associations with resources of \$65,852,076 and 167 co-operative credit associations with assets of \$2,477,268. National banks at the same date numbered 127 with resources of \$101,000,000.

The total assessed valuation of the state for tax purposes is \$2,060,835,168. The tax rate for state purposes for 1937 is set at 2.64 mills, which is calculated to produce \$5,429,100. The biennial budget for 1937-39 carried appropriations of \$56,365,788, of which about \$15,000,000 are Federal funds. The chief sources of state revenue, aside from the direct tax on property, are the tax on gasoline, motor vehicle licences, taxes on liquors and miscellaneous fees and licences. There is no state tax on personal or corporate incomes or on sales. The inheritance tax is collected by the counties. The state has no debt, though that of the local subdivisions in 1937 amounted to \$79,000,000.

**Agriculture and Manufactures.**—Nebraska is an almost purely agricultural state and its chief products are from the soil. Its most valuable products are cereals and livestock. The normal production of corn is nearly 250,000,000 bu. and of hogs more than 5,000,000 annually. Other important crops are wheat, oats, hay, potatoes and sugar beets. The total cash farm income in 1937 was \$252,600,000 including Government payments of \$17,425,000. One-fourth of this came from crops, three-fourths from livestock.

The chief industries of the state are connected with the processing of farm products. The principal industry is meat packing which employs about 15,000 persons in Omaha and has an annual payroll of nearly \$15,000,000. Next in order of their importance come the processing of milk, flour, feed and mill products; car and car repairing, and such minor industries as confectionery, leather and harness, lumber and millwork and concrete products. In 1935, 54,212 persons were gainfully employed in manufacturing and the value of manufactured products was \$209,384,111. (L. W. L.)

**Necrology:** see OBITUARIES.

**Negroes (American).** Negro share-croppers and tenants under Federal Resettlement and Farm Security plans shared land settlement in North Carolina, Alabama, Mississippi and Arkansas. The Southern Tenant Farmers Union with white and Negro members held its annual meeting at Muskogee, Okla., reporting 150 white and Negro delegates. The president's Farm Tenancy Commission had two Negro members and recommended Federal land purchase and settlement for white and Negro tenants and share-croppers, but this feature was omitted from Farm Security Act passed by Congress.

Negro industrial workers shared largely in organization of workers in steel, garment, and to some extent automobiles, under the Committee for Industrial Organization and as members and officials of United Mine Workers of America they furnished support and leadership in this new labour movement. Racial discrimination in unions was discussed at Fifty-seventh Convention of A.F. of L. in Denver, Colo., in October. Pullman Company officials conferred with representatives of the Brotherhood of Sleeping Car Porters, an affiliate of A.F. of L. led by A. Phillip Randolph, and under auspices of the U.S. Mediation Board signed an agreement August 25.

Improved housing for Negroes was greatly advanced by the opening of the Harlem (N.Y. city) river houses for 574 families; also University homes at Atlanta, Ga., and other projects including Atlantic City (N.J.), Jacksonville (Fla.), Louisville (Ky.), and Montgomery (Ala.). Negro sufferers in Ohio, Arkansas and Mississippi river flood districts reported being given fair treatment by the American Red Cross. In Louisville, Ky., the mayor appointed a leading Negro citizen to his Emergency Flood Com-

mittee.

**Civic.**—President Roosevelt nominated (February 4) W. H. Hastie, Harvard law graduate, U.S. District Judge in the Virgin islands; confirmed by the Senate; he was the first Negro on the Federal bench. Negro woman lawyer, Eunice Hunton Carter, was the only woman appointed with 15 men on Dewey's anti-racket staff, New York city, and was later named assistant on the district attorney staff after Jan. 1, 1938. The first Negro woman was appointed to Baltimore, Md., police department.

U.S. Supreme Court freed (April 15) Angelo Herndon from eighteen to twenty-year sentence to Georgia chain gang after six-year court struggle. Four of nine Scottsboro boys accused since March, 1931, of rape of two white women near Scottsboro, Ala., freed week of July 24 from Alabama prison with same indictment on which other five were sentenced: one to death and others to terms of years. The cases of the two who were sentenced had been reversed twice by the U.S. Supreme Court; one conviction had been reversed by the Alabama trial judge. The U.S. Supreme Court, October 24, denied a petition of one defendant for review of seventy-five year sentence. (See also SCOTTSBORO CASE.)

U.S. House passed Gavagan anti-lynching bill 277-119, April 15, 1937. The Senate advanced the Costigan-VanNuys anti-lynching bill to second place on the calendar where after an extended filibuster in the December special session it was fixed for order of day Jan. 6, 1938, at the regular session. Public opinion poll showed about 70% of the nation favoured legislation including 65% in the South. Tuskegee institute announced for 1937 eight lynchings, all Negroes, one less than 1936; in Alabama, 1; Florida, 3; Georgia, 1; Mississippi, 2; Tennessee, 1. The two victims in Mississippi were tortured with blow torches.

**Education and Art.**—Dr. Rufus Clement, dean of Louisville (Ky.) Municipal college for Negroes, was elected president of Atlanta university, succeeding the late Dr. John Hope. *The Crisis*, Negro magazine, estimated for the school year 1936-37, an enrolment of 22,045 students in Negro colleges and universities with 2,241 graduated with bachelor degrees; in mixed colleges and universities 1,902 Negroes with 130 graduated with bachelor's and 8 with Ph.D. degrees. The Maryland legislature abolished former differences and equalized by law school terms for white and Negro children. The Second National Negro Congress, about 1,200 delegates, at Philadelphia October 14-16, heard white and Negro civic and economic leaders and held three large mass meetings. A National Conference on Problems of the Negro and Negro youth, sponsored by the National Youth Administration, Mary McLeod Bethune, chairman, was held in Washington, D.C. January 6; it asked legislation for greater economic security among Negroes removal of colour bars in employment, adequate medical and educational facilities, free use of ballot and remedy for farm tenancy. Walter White, secretary, National Association for the Advancement of Coloured People, was awarded 23rd Spingarn Medal for distinguished achievement by American Negro. A blind Negro girl won an essay contest of public and parochial schools in New York with over 300,000 contestants and was awarded one of three major prizes by the New York Chamber of Commerce.

Memphis, Tenn., unveiled plaque in honour of W. C. Handy, pioneer composer of jazz music. William Edmondson, Negro tombstone cutter was given a one-man show by Modern museum of New York in October, for his "simple, emphatic forms" in Tennessee limestone. Henry O. Tanner, Negro painter, died in Paris May 25; he was the first American Negro artist to attain international fame.

**Religion and Health.**—Three Negro ministers were on teams of the National Preaching Mission that visited four Northern and three Southern cities. Pastors Association, Bridgeport, Conn., elected Negro minister president. Newport News (Va.) white



Methodist ministers resolved to admit Negro ministers to full membership. Methodist Episcopal Church, Methodist Episcopal Church, South, and Methodist Protestant Church voted upon union including Negro conferences in one separate Negro jurisdiction. The 15th annual Race Relations Sunday, February 14, promoted by Federal Council of Churches, was observed by thousands of white and Negro religious groups in churches, colleges, community organizations in all sections of United States; typical features in Portland (Me.), Brooklyn (N.Y.), Durham (N.C.), Chicago (Ill.), Dallas (Texas), Des Moines (Ia.), Portland (Ore.). White and Negro church women held interracial conferences, fostered by Federal Council of Churches, and representing denominations, at Asbury Park, N.J., October 14-15 and at Evanston, Ill., November 29-30. Included among 12 delegates representing the United States at Y.M.C.A. World Council, Mysore, India, were two Negroes—Channing H. Tobias and Benjamin E. Mays.

The Committee on Tuberculosis among Negroes, under auspices of the National Tuberculosis Association, with money from Rosenwald Fund, reported after five years among other work in places where Negro physicians and nurses learn to handle tubercular cases; support was renewed for another five years.

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**Nehru, Jawaharlal** (1890— ), Indian Nationalist and Socialist leader, son of Motilal Nehru; educated at Harrow and Cambridge; called to the Bar in London, returning to India shortly afterwards and becoming identified with the Indian Congress party, of which he became leader. After re-election to the presidency of the party on Dec. 6, 1936, Pandit Nehru, at the public session of its Congress on Dec. 27, explained its policy, and expressed his opinion that Socialism was the only remedy for India's ills. The party, he said, was entering the new legislatures not to co-operate with British imperialism, but to combat the Government of India Act and endeavour to end it. After the elections in Jan. and Feb. 1937, he reiterated this policy at a Party Convention on March 19, saying that "this Constitution must go, lock, stock, and barrel." He repeated his condemnation of the Government of India Act on March 27 and April 9, urging steadfastness in the Congress party's policy of refusing to take office in the provinces where it had obtained a majority; but in spite of his pleas the party on July 7 decided to accept office. On July 20, in a statement to the Indian people, Nehru appealed for their co-operation with the Congress, and exhorted them all to wear khadi (*i.e.* homespun cotton cloth) and display the national (*i.e.* Congressional) flag.

**Nejd:** see ARABIA.

**Nepal.** A long, narrow tract of Himalayan country, lying between India and Tibet. Its area is about 54,000 sq.mi., and its population under 6,000,000. The capital is Khatmandu (population about 80,000), where a British resident is stationed. The titular king is Maharaja Bir Bikram Jang; but by ancient usage the *de facto* ruler is the prime minister and commander-in-chief, Sir Joodha Shamsher Jang. The State has complete internal and external independence, but maintains close and friendly association with the Government of India, supplying the Indian army with the recruits for its fine Gurkha regiments.

Early Hindu invasions diluted the original Mongolian stock: Hinduism is practised as well as Buddhism. Cultivation is sparse except in the valleys; and there is much primeval forest, where the wild elephant is still found, among the foot-hills. Rice is freely grown in the part of Nepal which overflows into the plains of India. The Indian railway system runs up to the Nepal border; but Nepal's traditional policy of exclusiveness has prevented it from penetrating farther. (ME.)

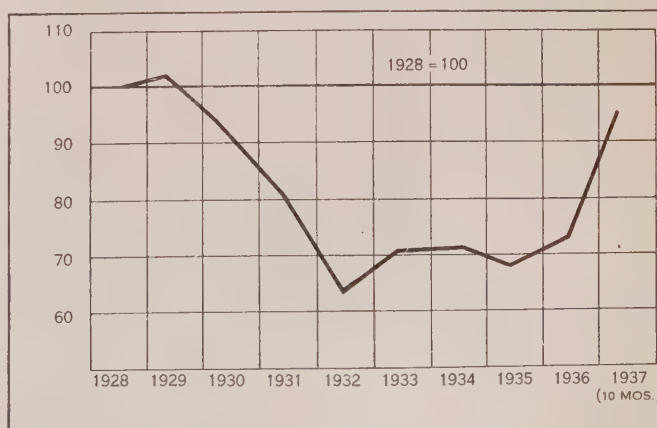
**Netherlands,** kingdom of north-west Europe, member of the League of Nations. Bounded N. by the North sea, E. by Germany, S. by Belgium and W. by the North sea. Capital (political), The Hague. Ruler, Queen Wilhelmina (born, 1880; succeeded, 1890; crowned, 1898). National flag, red, white, and blue, in equal horizontal stripes.

**Area and Population.**—The area is 12,692 sq.mi. (exclusive of inland waters, 511), divided into 11 provinces, thus:

Province	Area (sq. mi.)	Population (1935 estimate)	Density (per sq. mi. 1935)
Brabant, North . . . . .	1,921	975,125	507.6
Drente . . . . .	1,029	238,414	231.7
Friesland . . . . .	1,286	415,178	322.8
Groningen . . . . .	886	413,232	466.4
Guelders . . . . .	1,940	891,250	459.4
Holland, North. . . . .	1,137	1,614,424	1,419.9
Holland, South. . . . .	1,130	2,078,704	1,839.6
Limburg . . . . .	846	589,473	696.8
Overysel . . . . .	1,301	553,480	425.4
Utrecht . . . . .	526	452,221	859.7
Zealand . . . . .	690	253,005	366.7

The census population (1930) was 7,935,565 (1935 figures: 8,474,506—4,220,674 males, 4,253,832 females). Amsterdam, the commercial capital (781,645) and Rotterdam (595,448) both exceeded The Hague (482,397); Utrecht, Haarlem, Groningen, and Eindhoven exceeded 100,000 and 12 others 50,000 (1936).

**History.**—Executive power is solely the sovereign's; legislative responsibility rests jointly upon the sovereign and parliament (states-general). A state council of 14, appointed by the sovereign, is, however, consulted on all legislative and many executive matters. The ministry consists of a president and nine other members. The second chamber has 100 deputies, elected for four years by universal adult suffrage (over 25) and proportional representation (1937 election: Catholics, 31; Social-Democrats, 23; Anti-Revolutionists, 17; Christian Historicals, 8; Liberal Democrats, 6; other parties, 15), the first chamber has 50 members, elected by the provinces for six years, half retiring every three years. The 1937 elections disappointed the National Socialists and strengthened the position of Dr. Hendrick Colijn (born,



NETHERLANDS: Industrial production index (*The Annalist*)



1869; prime minister, 1925-26 and since 1933).

On Jan. 7, Princess Juliana, only child of Queen Wilhelmina, was married at The Hague, to Prince Bernhard von Lippe-Biesterfeld. In June the princess announced on the radio her expectation of the birth of a child. The marriage occasioned a revision in the constitution, to provide an income for Prince Bernhard; that of Queen Wilhelmina was reduced.

Germany's guarantee of neutrality being rejected (February), defence steps were reconsidered. The parties to the Oslo convention (1930) assembled at the Hague (March; see also BRUSSELS; NORWAY) and signed a new pact there (May); later, Holland's Oslo concessions were extended to Great Britain and Germany.

**Trade and Communications.**—Over two-thirds of the land was under cultivation in 1935 (a slight increase), pasturage leading (there were nearly  $2\frac{3}{4}$  million cattle and nearly  $1\frac{3}{4}$  million pigs; butter showed an increase, cheese a drop); leading crops are rye and potatoes. Natural resources include coal and salt (one mine). The sea-fisheries are of moderate value.

The centres of population are devoted to trade rather than manufactures, though the output of artificial silk stands seventh in the world. The following figures for exports and imports (1936) include goods in transit for other countries, notably Ger-

many: 772,615,000 guilders (£85,846,000) and 1,016,524,000 guilders (£112,947,000) respectively; these figures showed rises after drops, and those for half 1937 showed further rises. The same is true of Anglo-Dutch trade, with rises of 6% in exports from, and 8.9% in imports to, Great Britain (bacon, condensed milk, bulbs and paper leading).

At Dec. 1935, the mercantile marine had 823 ships (3,285,772 cubic metres). In inland transport the 4,750 miles of rivers and canals play an important part. The use of railways and tramways tends to decline in the face of motor-bus competition. The development of telegraphs, telephones, and radiographs has been normal. Subsidized air services (including the Amsterdam-Batavia line) place Holland fifth in the world in air transport, with (1937) 15,800 miles of route, 110,000 passengers and 1,617 tons of goods.

**Finance and Banking.**—The common unit of currency is the (silver) guilder, or florin (at par, 12.11 guilders=£1).

The 1938 budget showed an income of 689,950,275 guilders (£76,661,000; increase, £6,645,000), about one-quarter derived from direct taxation; and expenditure of 703,195,931 guilders (£78,133,000; decrease, £9,241,000); in view of recent trends the paper deficit was expected to disappear. Direct taxation averages 17 guilders per head over the entire population. Total public debt (Jan. 1937): 2,773,265,000 guilders (redemption, 39,771,000 guilders).

The Netherlands Bank, though private, alone issues bank-notes (two-fifths covered). Position at March 1, 1937:

Assets	Guilders	Liabilities	Guilders
Gold and Silver .	897,271,000	Notes in Circulation . . . . .	814,257,000
Discounts and Advances . . .	199,800,000	Deposits . . . . .	299,994,000
Totals . . . . .	1,097,071,000	Totals . . . . .	1,114,251,000

In 1935 the State postal and other savings banks showed 3,481,714 depositors; average deposit account, 60 guilders.

**Education and Religion.**—Primary education is compulsory. In 1935-36, 7,953 elementary schools (public and private) had 1,232,452 pupils; 430 secondary schools, 71,935, with nearly twice that number in technical schools. In the public universities—Leiden, Groningen, Utrecht and Amsterdam (municipal)—there were 8,630 students; the two voluntary universities had more than 1,000 more. There is complete religious liberty, with State allowances for the churches: Dutch Reformed and other Protestants, closely followed in membership by Roman Catholics, and at longer intervals by Jews and Jansenites.

**Defence Forces.**—In the (home) army there were (1936) 1,568 officers and 15,769 other ranks. The (home) fleet had two coast defence ships and 22 other effective vessels (11 submarines), the East Indies fleet, one coast defence ship, three cruisers, eight destroyers, and 15 submarines; one cruiser is being built. The former maximum annual contingent of 19,500 men (voluntary and conscript) has been nearly doubled, and the period of service raised from  $8\frac{1}{2}$  to 11 months. The State police had, in the cavalry (frontier guards) some 22 officers and 1,180 men, in the field constabulary, 1,340, all ranks. Defence budget (1937); 84,807,998 guilders.

**BIBLIOGRAPHY.**—K. Zeeman, *Moderne Geografie van Nederland* (Amsterdam, 1930); Enno van Gelder, *Histoire des Pays-Bas* (Paris, 1936). (H. Fw.)



CROWN PRINCESS JULIANA of The Netherlands and Prince Bernhard Lippe-Biesterfeld listen to the Court chaplain immediately preceding their marriage at The Hague



Netherlands New Guinea: *see* NEW GUINEA.

**Neurath, Konstantin von** (COUNT) (1873– ), German statesman, born in Württemberg, trained for the law, but adopted a diplomatic career, and was from 1930 to 1932 ambassador in London. Since 1932 he has been foreign minister of the Reich. Count von Neurath paid a visit to Vienna in the latter part of Feb. 1937 to discuss Austro-German relations and the treatment of Nazis in Austria. At the beginning of May he met Mussolini and Count Ciano in Rome, where discussions took place on the strengthening of the "Rome-Berlin axis"; and during June he visited in turn Belgrade, Sofia, and Budapest, on a mission to endeavour to strengthen the ties binding the States of S.E. Europe with Germany, and meeting the premiers of the three countries and the Tsar of Bulgaria.

**Neutrality.** Neutrality may be broadly defined as the attitude of a State in remaining aloof from a war between two States or groups of States, while observing towards them certain rights and duties based upon customary law and international conventions or treaties. It is, first of all, an attitude of political isolation, in the sense that it makes no effort to distinguish between the opposing groups in respect to the merits of the controversy, but rather regards them as being equally in the right to the extent that international law has imposed no restraint upon their recourse to hostilities. This conception of neutrality, which developed during the 18th and 19th centuries, concentrated upon the immediate concern of the neutral State to avoid being drawn into war at a time when there was no recognized international procedure for passing judgment between the belligerents and each State was free to go to war whenever it believed it to be to its national interests to do so.

The policy of isolation which characterized neutrality down to the close of the World War was, however, never accompanied by a policy of commercial isolation. Neutral States saw no reason why a war between two States should have the effect of cutting off their trade with either or both countries. They recognized certain traditional rights of the belligerent in respect to the maintenance of a blockade and the capture of contraband, but they sought to hold such interference with their commerce down to a minimum. Sharp controversies between belligerents accompanied most wars, and more than once, as in the case of the United States in 1812 and in 1917, the neutral was led to declare war upon one of the belligerents in defence of its alleged rights of trade with the other.

In addition to the issues created by the interference of belligerents with neutral rights of trade, numerous controversies arose bearing on the one hand upon the violation of neutral sovereignty by the commission of acts of hostility by a belligerent upon neutral territory or in neutral territorial waters, and on the other hand upon the extent of the obligation of a neutral to prevent the use of its territory as a starting point for expeditions in favour of one belligerent against another. Municipal laws passed by a neutral State to give effect to its obligations towards the belligerents are known as "neutrality laws," as distinct from the general international law of neutrality. Such were the neutrality laws passed by the United States Congress in 1794 and 1818 and the British Foreign Enlistment Act of 1870.

The paradoxes attending the desire of neutral States to avoid being drawn into war and their determination not to permit interference with their trade beyond the accepted rules reached their height during the World War. Belligerents claimed that the old rules were obsolete when they failed to take account of the changes in the conditions of warfare which worked to their advantage, and then inconsistently stood for the existing law when

the changed conditions worked against them. Thus the customary rule with respect to the capture of belligerent merchant vessels broke down when the submarine made its appearance as a destroyer of commerce. Again, the rule that there was no obligation on the part of the neutral State to prevent its citizens from shipping arms broke down when the United States became a vast arsenal of supply for the Allied Powers.

**League of Nations.**—At the close of the World War an effort was made to put an end to the status of neutrality by making all nations collectively responsible to protect one another, so that in the future, if war broke out, instead of being neutral they would determine which of two parties to a conflict was the aggressor and take sides against it. The United States, however, refused to become a party to the collective security system of the League of Nations, with the result that neutrality continued to be a possible legal status; and it remained uncertain to what extent the United States would insist upon the traditional rights of neutral trade in the event of collective action by the members of the League against an aggressor.

**Kellogg-Briand Pact.**—The uncertainty continued even after the adoption of the Kellogg-Briand Pact which renounced war as an instrument of national policy and agreed that the settlement of all disputes should never be sought except by pacific means. Did this mean that, if the Pact were violated at the same time that the Covenant of the League of Nations was violated, the United States would accept such modifications of its neutral rights of trade as were necessary to avoid interference with sanctions imposed by the League against an aggressor? The answer was not clear. The Pact contained no machinery to determine the question of its violation; and there were loopholes in its obligations which prevented an automatic determination of the issue.

The imposition by the League of Nations of sanctions against Italy in 1935 raised the issue of neutrality in concrete form. In anticipation of Italian hostilities against Ethiopia, the U.S. Congress passed a law, Aug. 31, 1935, which although designated a "neutrality act" actually went beyond the traditional obligations of a neutral by prohibiting the shipment of arms and ammunition and the making of loans to belligerents. Inasmuch, however, as the law treated both belligerents alike, irrespective of the determination by the League that Italy was the aggressor, it still continued the policy of isolation.

A new law was passed by Congress on April 30, 1937, which extended the provisions of the law of 1935 by authorizing the President, if in his judgment the emergency called for it, to forbid the export of "certain articles or materials" when necessary to promote the security or preserve the peace of the United States. These "other articles" appeared to include goods that would normally be contraband, such as scrap iron, oil, cotton and other raw materials of war industries. No American ship might carry them to a belligerent, but they could be obtained by the belligerent on what was popularly called the "cash and carry" plan. This law concentrated upon keeping United States citizens out of the area of conflict. It was recognized by its proponents as not being a strict "neutrality" law, and it was criticized by opponents as having the effect of favouring the belligerent which happened to have command of the seas and could come and buy what it needed. The test of the new law came when hostilities were begun by Japan against China in July 1937. The President, not wishing that Japan, after violating the Nine-Power Treaty, should get the practical benefits of the "cash and carry" plan, took the position that since neither Japan nor China had formally declared war there was no compulsion upon him under the law to "find that there exists a state of war." The neutrality law was therefore not brought into effect (Jan. 1, 1938).

What is to be the future of neutrality? The answer depends in



large part upon the possibility of the development of an effective system of collective security in which all of the leading nations shall take part. If such a system can be established, then each nation may be expected to find a strong national interest in the maintenance of international law and order, and neutrality in the presence of violations of the law would be as inconsistent between nations as between citizens under national law. Failing the establishment of a system of collective security, it would seem probable that in the event of war States not parties to it will be presented with the choice of asserting their traditional rights of trade at the risk of controversies with the belligerents or of pursuing a policy of greater or less commercial isolation in the hope that by the sacrifice of their trade they may avoid being drawn into the conflict. (See also CONGRESSIONAL LEGISLATION; UNITED STATES: *Congress*.) (C. G. FE.)

**Nevada**, popularly known as the "Sagebrush" and also as the "Silver" State, has an area of 110,690 sq.mi. and a population of 91,058 (U.S. census, 1930); 101,000 (estimated, July 1, 1937). The State capital is Carson City, with a population of 1,596 and the largest city is Reno, population 18,529. Of the State's population 37.8% are urban; 89.4% white, 6.6% Indian, 3.4% Mexican or oriental, and .06% coloured. About 83.4% of the population is native born and 16.6% is foreign born.

**History.**—Nevada has been unusually prosperous in recent years except for a brief period during 1932 and 1933, the years of a nation-wide depression. Large factors in maintaining prosperous conditions in the State have been the construction of the Boulder dam and appurtenant structures in southern Nevada, at a cost of about \$100,000,000, and other large impounding dams for the conservation of water, built on the Truckee and Humboldt rivers in Northern Nevada. A new power line costing approximately \$1,000,000 now conveys cheap power from the Boulder dam to the well mineralized areas in the south-eastern part of the State, and improved scientific methods of prospecting are causing development of further commercial ore bodies in the older mining districts like Comstock and Eureka.

The present principal State officials are as follows: governor, Richard Kirman; lieutenant-governor, Fred Alward; secretary of State, Malcolm McEachin; attorney-general, Gray Mashburn; State treasurer, Dan Franks; State controller, Henry Schmidt; surveyor general, Ray Staley; mine inspector, Matt Murphy; U.S. Senators, Key Pittman and Pat McCarran; U.S. Representative, J. G. Scrugham.

**Education.**—The per capita expenditure for each child of school age in Nevada (1936) was: elementary \$130.63; high school \$164.20. The only institution of collegiate rank is the University of Nevada in Reno which has an enrolment of 1,010 students. Its library contains about 55,000 volumes. The Mackay School of Mines is particularly well equipped and endowed, while the other branches of the University are likewise supported by the State. There are in Nevada 278 elementary schools with an enrolment of 14,748 and 40 high schools with 4,972. During 1936 the State employed 651 elementary school teachers and 265 high school teachers at an expenditure of approximately \$503,000.



RICHARD KIRMAN, governor of Nevada

## NEVADA—NEW BRUNSWICK

**Charities and Correction.**—A State orphans' home is located at Carson City, a State hospital for mental diseases at Reno, and a home for male juvenile delinquents at Elko. The State penitentiary is located at Carson City.

**Banking and Finance.**—The finances of the State of Nevada are in unusually sound condition. There is a Treasury surplus of more than \$3,000,000, and no bonded debt except that held within the State. The State has no income tax, inheritance tax, gift tax or sales tax. The principal banking institution of Nevada is the First National in Reno which has 11 branches throughout the State, having deposits in excess of \$28,500,000.

**Agriculture, Mineral Production.**—According to the latest census there are 3,696 farms in Nevada having a farm population of 15,385 persons. The State has a total farm acreage of 3,621,769 ac. mostly held in units exceeding 1,000 acres. The principal crop is hay used for live stock feed. The number of cattle ranged is 342,213 and the number of sheep ranged is 834,091. The ranges on the public domain are now largely under the control of the U.S. Forest Service and the U.S. Grazing Service, and efforts are being made to prevent overgrazing through reduction of the number of animals allowed on the range. The mineral production of Nevada in 1937 was valued at \$34,540,326. It included: gold, 276,100 oz., \$9,663,500; silver, 4,536,000 oz., \$3,520,000; copper, 155,770,000 oz., \$14,150,000; lead, 17,500,000 oz., \$810,000; and zinc, 24,370,000 oz., \$1,220,000.

Nevada has a recorded production of 23,354,644 oz. of gold, valued at \$495,533,522, that was produced from 1859 to 1937 inclusive. This constitutes about a tenth of United States gold production since 1792. Of silver 556,118,000 oz. were produced during the same period. This amounts to about a sixth of the total United States silver production.

Copper production in the State became important much later, but a total of 1,184,991 tons of copper is credited to Nevada so that it ranks fifth among the States in copper production, though its current rate is exceeded by only three other States.

Nevada has likewise been an important producer of both lead and zinc; and in recent years it has become the chief State in production of tungsten. Scheelite ores are mined in three localities, near Mill City, Mina and Lovelock. In 1936 production amounted to 1,631 tons of 60% WO<sub>3</sub> concentrates.

(JA. G. SC.)

**Newbery Medal:** see CHILDREN'S BOOKS; LITERARY PRIZES: *United States*.

**New Brunswick**, one of the original Provinces which united to form the Dominion of Canada in 1867; area 27,985 sq.mi.; population, according to the Dominion census of 1931, 408,219, estimated Jan. 1, 1938, 435,000. Capital, Fredericton, 8,830. The only other cities are Saint John, 47,514, the most important port, and Moncton, 20,689, the main divisional point of the Canadian National Railway in the Maritime Provinces. Of the Province's population 263,432 are rural, or 64%; 403,049 are Canadian born or nearly 99%. The present Government assumed office in 1935 as the result of a Liberal victory over the Conservatives.

The New Brunswick Electric Power Commission, recently established, now owns and operates two generating stations, one near the city of Saint John and the second at Grand Lake in the Minto coal area. The former sells power to the cities of Saint John, Moncton and Fredericton and the latter to Newcastle and Chatham. Power is also distributed directly by the Commission to a large number of villages and rural communities. The value of the net production for the Province in 1934 was \$58,732,376 (£11,746,000), an increase of nearly 25% over the preceding year.



The maximum of the fourteen-year period ending in 1934 was reached in 1928. The high level of that year was followed by four years of decline. The estimated wealth of the Province is \$885,11,000 (£177,102,000); wealth per capita \$2,118 (£420). The net value of manufactured products in 1935 was \$27,643,366 (£5,528,000), a slight increase over the preceding year. The gross value of agricultural products in 1935 was \$25,278,000 (£5,055,000). New Brunswick is not an important mineral-producing Province, the value of the output in 1936 being only \$2,499,380 (£499,000).

New Brunswick is represented in the Dominion Parliament by 6 Senators, appointed for life, and 10 members of the House of Commons, who are elected for five years or less.

**BIBLIOGRAPHY:** *The Royal Gazette; The Annual Report on Public Works; Report of Hydro-Electric Power Commission.* (J. C. HE.)

**New Caledonia:** see PACIFIC ISLANDS, FRENCH.

**New Deal:** see CONGRESSIONAL LEGISLATION; ELECTIONS; RELIEF; ROOSEVELT, FRANKLIN DELANO; SOCIAL SECURITY; SUPREME COURT OF THE UNITED STATES; TRADE AGREEMENTS; UNITED STATES.

**Newfoundland,** island off the east coast of Canada, the earliest overseas British possession; in theory a self-governing dominion, but ruled since the financial crisis of 1933 by a governor assisted by a governing commission consisting of three representatives of Newfoundland and three of the United Kingdom, responsible to the British Dominions Office. Labrador (1947, v.) is a dependency of Newfoundland. Area, 42,740 sq.mi.; population (census 1935), 289,500. St. John's, the capital (pop. 1935, 39,886), is the only town of over 10,000 inhabitants. The Anglican and Roman Catholic Churches are roughly equal in membership (about 95,000 each), closely followed by the United Church. The schools, mainly under Government control, though denominational, number about 1,100, with some 56,000 pupils.

In March 1937, a petition to the King was prepared calling attention to the continuance of conditions of poverty and the increased expenditure under the Commission of Government, and asking for the restoration of normal governmental conditions and the recall of the British Commissioners.

The principal industry is fishing, which employed 35,390 persons in 1937. There are over 800 mi. of railway, and steamers connect the coast with Cape Breton island. The estimated revenue for 1937-38 was £2,022,835 and the expenditure £2,718,669. Exports—mainly newsprint, fishery products, and iron ore—were valued in 1936-37 at £5,611,615 and imports at £4,784,977. The dollar, of equivalent value to the American dollar, is the coinage standard.

**New Guinea** consists of the British (Australian Commonwealth) territory of Papua, Netherlands New Guinea, and the mandated territory, which includes the Bismarck archipelago and other islands.

**Papua** comprises the south-eastern part of the island of New Guinea, with a number of groups of islands. Capital, Port Moresby. Area: mainland, 87,786 sq.mi.; islands, 2,754 square miles. Population (1937), 1,306 Europeans and about 275,000 Papuans. The territory is administered by the Australian Commonwealth Government through a lieutenant-governor, Sir Hubert Murray, K.C.M.G. Revenue (1936-37), £171,791; expenditure, £71,959. Exports (1936-37), £524,001; imports £452,056.

**Netherlands New Guinea** consists of the portion of the mainland W. of long. 141° E. with adjacent islands. It is governed with the Molucca islands under the governor-general of the Netherlands East Indies, Jonkheer Dr. A. W. L. Tjarda vanarkenborgh Stachouwer.

**The Mandated Territory of New Guinea** lying between the equator and 8° S. lat., and between 141° E. and 156° E. long., comprises the former German dependencies of Kaiser Wilhelm's Land (New Guinea), the Bismarck archipelago, and the eastern group of the Solomon islands. The mandate is held by Australia, and is administered under an administrator, Brig.-Gen. W. R. McNicoll. Area: mainland, 70,000 sq.mi.; Bismarck archipelago, 19,200 sq.mi.; Bougainville and Buka (Solomon islands), 4,100 square miles. Population (1936): 5,881 Europeans (including 3,352 British, 477 Germans), 1,571 Asiatics, and 500,040 natives. Capital, Rabaul (New Britain). Rabaul was seriously damaged by volcanic eruption in June 1937, and proposals were made for shifting the capital. Revenue (1935-36), £419,919; expenditure, £425,793. Exports (1935-36), £2,573,251; imports, £1,290,788.

(H. V. H.)

**New Hampshire,** one of the original States of the United States, popularly known as the "Granite State"; area, 9,282 sq.mi.; population (U.S. census 1930) 465,293, estimated July 1, 1937, 510,000. Capital, Concord, 25,228. Other cities with populations exceeding 20,000: Manchester, 76,834; Nashua, 31,463; Berlin, 20,018. Of the State's population 273,079, or 58.7% were (1930) urban; 464,350 whites. Of the white population, 381,690 were native born, and 82,660, foreign born. Important foreign-born elements were: United Kingdom and Ireland, 11,539; French Canadians, 37,682; other Canadians, 13,277.

**History.**—Governor, Francis P. Murphy (Republican); secretary of State, Enoch D. Fuller; State treasurer, F. Gordon Kimball. During 1937, Alphonse Roy (Democrat) unsuccessfully contested the seat of U.S. Representative Arthur B. Jenks, following their election tie of 1936. In the presidential election of Nov. 3, 1936, Roosevelt and Garner received 108,460 votes, Landon and Knox 104,642. Important measures passed by the legislature in its 1937 session of record-breaking length were: a 48-Hour Act for women and minors in labour; acts establishing a State Milk Control Board; a State Police, and a State Department of Public Welfare to administer poor relief and old-age assistance and to supervise State welfare institutions; provision for a constitutional convention in 1938 to consider an amendment to authorize a State "RFC" to lend money to needy industries.

**Education.**—New Hampshire's educational system included 103 approved public high schools; 18 public academies approved as high schools; 4 accredited private academies; and 2 normal

schools located at Plymouth and Keene. There are also four institutions of higher education: University of New Hampshire, Durham; Dartmouth college, Hanover; St. Anselm's college, Manchester; and Colby Junior College for Women, New London. There were in 1935 some 357 juvenile camps licensed by the State Board of Health.



FRANCIS PARNELL MURPHY, governor of New Hampshire

At Concord is located the New Hampshire Historical Society, Otis G. Hammond, director. Total State expenditures for public education, year ending June 30, 1936, \$7,549,552.

**Charities and Correction.**—The principal charitable and correctional institutions are the New Hampshire State Hospital



for the Insane, Concord; Laconia State school, for feeble-minded children, Laconia; New Hampshire State Sanatorium, for tubercular patients, Glencliffe; New Hampshire Industrial school, for committed minors, Manchester; State Prison, Concord; and Soldiers' Home, Tilton.

**Banking and Finance.**—Savings banks and savings departments of trust companies reported deposits of \$201,592,085 as of June 30, 1937, being an increase over June 30, 1936, of \$3,790,867. There were also 28 building and loan associations with assets of \$11,157,511, June 30, 1937, an increase of \$251,050 over preceding year. Cash receipts of State Treasury Department, for fiscal year ending June 30, 1936, \$30,745,450; cash disbursements, \$29,531,508. Net bonded indebtedness June 30, 1936, \$12,227,045. Average tax rate in 1936, \$34.30 on each \$1,000 of valuation, or double the average rate in 1916.

**Agriculture, Manufactures, Mineral Production.**—Major farm products are milk and cream, potatoes, apples, dairy cattle, and live poultry, marketed principally in cities of Eastern and Central Massachusetts and New York city. Estimated acreage in 1934, used for crops, 448,000; for pasture, 961,000; woodland, 1,274,000. Lumber production, 1934, estimated at 155 million board feet. Number of farms, 1935, 17,695, with average value of \$3,783. Principal industries produce textiles, boots and shoes, and lumber and wood products, including paper. Value of manufactures, in 1935, \$209,384,111. Electric power generated in 1935, in kilowatt hours: water power, 681,000,000; fuel power, 50,000,000. Estimated income from recreational facilities afforded by State, around 1930, \$76,256,500. Mineral products are of minor importance, but include granite, mica, sand, and gravel.

(W. E. Ss.)

**New Hebrides,** an archipelago in the south Pacific between latitudes 13° S. and 21° S. and longitudes 166° E. and 170° E., administered under a British-French condominium. British high commissioner, Sir Arthur Richards, K.C.M.G. (governor of Fiji and high commissioner for western Pacific); French high commissioner, M. Marchessou (governor of New Caledonia). Resident commissioners: British, G. A. Joy; French, M. Sautot. There are English and French courts, and a mixed court presided over by a judge, who is a national of neither country (Señor Manuel Bosch Barrett). Area, approximately 5,700 square miles. Population (1937): 197 British nationals, 750 French nationals, 1,042 French-protected subjects, and about 40,000 natives. Budget (1936): joint revenue, £22,220; joint expenditure, £21,866. Expenditure on the British service in 1935 was £8,911. Trade (1936): exports, £122,068; imports, £123,800.

(H. V. H.)

**New Jersey,** described as the "Garden State," was one of the original States of the United States; area 8,224.44 sq.mi.; population according to U.S. census of 1930, 4,041,000, estimated by U.S. Census Bureau, July 1, 1937, 4,343,000; capital, Trenton, 120,000. The largest city is Newark, population 1930, 442,337. Of the State's population in 1930, 1,571,548 are native whites and of native parentage; 208,828 coloured; 1,413,239 native white and of foreign or mixed parentage; 844,442, foreign born. The urban population was 3,339,244, or 82.6%.

**History.**—The year 1937 saw the election for the third time as governor of A. Harry Moore, Democrat of Jersey City, the first third-term governor in the history of the State. He defeated Senator Lester H. Clee, Republican of Essex county, by 45,000 votes. The Republicans, however, won control of both houses of the legislature for the 1938 session and will have a majority on joint ballot by 27 votes. President Roosevelt, in 1936, again carried New Jersey, this time by 364,128, the largest majority

ever accorded a candidate in a general election in the State's history. Governor Hoffman during his administration endeavoured unsuccessfully to have the legislature enact a combination sales and income tax calculated to raise \$40,000,000 annually. Primarily both taxes were designed to provide funds for unemployment relief which, in 1937, was less acute than during the nadir



A. HARRY MOORE, governor of New Jersey

of the depression. The State appropriated \$12,000,000 as aid for municipalities in meeting the relief problem, but the sum was insufficient. The legislature was reconvened in November to appropriate additional funds but failed to do so. The burden of meeting the deficit was shifted to Governor Hoffman who raised from general sources the necessary \$3,000,000. The 1936 session of the legislature was notable for the fact that less than 200 laws were adopted, the lowest number since 1888. Legislation approved included the revision of New Jersey statutes, representing a 12-year task. Bills designed to stop the flow of bootleg coal from the Pennsylvania fields were adopted, as were also appropriations aggregating \$88,506,912. Salary reductions imposed upon State employees as a depression measure were rescinded, and graduated increases were granted. The year 1937 witnessed the completion of the south tube of the Lincoln tunnel connecting Weehawken with mid-town New York. Work of constructing the north tube continued, with the expectation that it would be completed by 1941. The total cost will be \$85,000,000.

**Education.**—New Jersey's excellent system of public schools had its inception in 1816. In 1936 the total expenditures for all public school purposes was \$114,194,271. That total included State and county administration, pension funds, libraries, training and special schools, debt service and incidental educational costs. The average daily attendance in public schools in 1933-34 was 700,195 and the enrolment in private and parochial schools aggregated 135,276.

**Finance.**—A total of \$530,277,386.45 was collected in local State and Federal taxes in New Jersey for the fiscal year ending June 30, 1937. The assessed value of real and personal property in 1936 was \$5,570,748,443 of which \$4,927,442,133 was represented by real estate and \$643,306,310 by personal property. The State's bonded debt at the close of the 1936 fiscal year was \$189,776,000.

**Agriculture and Manufacturing.**—As urban employment opportunities declined during the depression years from 1930 to 1935, there was a substantial "back to the land" movement in New Jersey. Where the number of farms in 1930 had declined to 25,378 from 29,671 in 1925, the farms under cultivation had increased by 1935 to 29,375, an increase of 3,997. The value of farm lands and buildings in 1930 was \$298,845,113. Official estimates in 1935 placed the value of this property at \$234,313,485, although the average value of farm land per acre in the latter year was only \$122.41 as against \$169.99 in 1930. Total farm acreage in 1935 stood at 1,914,110 compared to 1,758,027 in 1930. Farm cattle increased from 152,187 in 1930 to 177,879 in 1935. The dairy industry produced 798,000,000 lbs. of milk in 1935. There were in the State 139,000 cows and heifers valued at \$106 per head, the highest in the United States. The total value of 64 principal crops in 1936 was, according to the U.S. Department of Agriculture, \$34,448,000.



New Jersey ranked sixth of the United States in the value of output during 1935 with 7,468 establishments employing 17,078 wage-earners and producing products worth \$2,439,426. In order of importance, the leading industries and their value of output were: petroleum refining (\$157,862,663), copper refining (\$143,525,982), chemicals (\$138,128,726), electrical machinery (\$91,709,000), meat-packing (\$76,015,870), and paints and varnishes (\$65,503,612). (A. J. S.)

**New Mexico**, the fourth largest State in the South-western United States, popularly known as the "Sun-belt State"; area, 122,634 sq.mi.; population according to the U. S. census of 1930, 423,317 (official estimate July 1, 1937, 422,000). Capital Santa Fé, 11,176. Albuquerque is the only larger city, 26,570. Of the State's population 106,816 are urban, or 25.2%; 331,755 white; 59,340 Mexican; 28,941 Indian.

**History.**—The Administration, legislature, and congressional representation of New Mexico is Democratic. The chief officers of the State elected for two years are: governor, Clyde Tingley; lieutenant-governor, Hiram M. Dow; secretary of State, Mrs. Elizabeth F. Gonzales; auditor, Jose O. Garcia; treasurer, James M. Connelly; attorney-general, Frank H. Patton; superintendent of public instruction, H. R. Rodgers; commissioner of public lands, Frank Worden. The national representatives are Senator Carl A. Hatch, Senator Dennis Chavez, and Representative John W. Dempsey.

Recent laws of interest provide for local option in the sale of liquor, a State examination and licence for automobile drivers, a legislative reference bureau, property appraisal every four years, a State police force and ports of entry to enforce motor vehicle laws, and a social security act. The child labour amendment has been ratified and a State constitutional amendment adopted limiting property taxation to twenty mills on the dollar.

**Education.**—For the school year 1936-37 public schools cost \$2,218,282 for 162,436 children. The State also supports the University of New Mexico, College of Agriculture and Mechanical Arts, Normal university, School of Mines, Normal school, Eastern New Mexico Junior college, Spanish American Normal School, and the Military Institute.

**Charities and Correction.**—State charitable institutions are: School for the Deaf, School for the Blind, Home and Training School for Mental defectives, Industrial school, Girls' Welfare School, Insane Asylum, Miners Hospital, penitentiary, and the Carrie Tingley Crippled Children's Hospital.

## Banking and Finance.

On June 30, 1936, there were 41 banks with total resources of \$52,000,000. The assessed value of New Mexico for 1936 was \$310,791,170. Total State revenue receipts for the fiscal year ending June 30 were \$22,396,000. A 5¢ gasoline tax yielded \$4,057,000; a 2% sales tax, \$1,069,591.72; and a 2 mills general property tax, \$1,928,353.71.

Estimated \$70,000,000 was spent by tourists.

**Agriculture and Mineral Production.**—The leading farm products were: cotton, \$4,600,000; wheat, \$2,050,000; beans, \$275,000; cottonseed, \$1,150,000. Live stock raising is a major activity, there being 1,039,000 head of cattle and 2,477,000 head

of sheep valued at \$52,342,000 in 1936. In the same year minerals of the following values were produced: petroleum, \$22,033,000; coal, \$4,300,000; natural gas, \$4,292,000; zinc, \$2,066,800; gold, \$1,156,245; natural gasoline, \$1,125,000. (F. D. R.)

**New South Wales.** A State of the Australian Commonwealth, lying in the south-east, and occupying 309,432 square miles. The State governor, representing H. M. King George VI, is Lord Wakehurst. Population (Dec. 31, 1936), 2,682,000, forming 39.3% of the population of Australia. Capital, Sydney. The premier of a Nationalist government is Mr. B. S. Stevens.

**History.**—Legislation in 1937 included a Public Health Amendment Act, designed to check the spread of infantile paralysis, particularly by preventing the admission of children from the State of Victoria; an Act providing for financial assistance to a company to work the shale oil deposits at Newnes; an Act to prolong a moratorium on mortgage debts for two years from Feb. 1938; an Industrial Arbitration Act applying the Commonwealth basic wage to State industrial awards; a Local Government Act providing for loans to county councils; and an Act imposing a uniform speed-limit of 30mph. in built-up areas. A notable development in State politics was a movement of revolt in the Labour party against the leadership of Mr. J. T. Lang after the Federal elections, in which Labour was disappointed.

Preparations were made for celebrating in 1938 the 150th anniversary of the founding of Australia.

**Trade, Industry, and Finance.**—The output of primary and secondary industries in 1935-36 was valued (gross) as follows: wool, £27,321,000; agriculture, £16,796,000; other pastoral, dairying, and farmyard industries, £20,432,000; silver lead ore, concentrates, etc., £3,816,000; coal, £5,127,000; other minerals, £2,577,000; forests, fisheries, trapping, £4,165,000; total, primary industry, £76,759,000; manufacturing industry (net), £69,470,000. In June 1937, of 856,000 workers available for employment, only 56,000 were not normally employed (excluding relief workers). In November a record low level of 4.3% of registered unemployment was established, the figure in the previous November having been 9.9%.

The budget for 1936-37 closed with a surplus of £74,310. For 1937-38, expenditure was expected to increase from £49,884,775 to £53,642,522, and receipts from £49,959,085 to £53,651,920, giving an estimated surplus of £9,398. These figures include the gross returns of railways and other business undertakings, which provided £24,488,095 of gross revenue and £7,839,428 of net revenue (excluding interest) in 1936-37. Net revenue from them in 1937-38 was estimated at £8,143,702.

Of the increased budget expenditure in 1937-38, basic wage increases accounted for £1,507,000, and the full restoration of public service salaries for £645,000. The special wages and income taxes, imposed in 1931-32 for the relief of unemployment, were lightened by graduated reductions of tax on incomes under £1,000, by further reducing rates of tax on heads of families, and by exempting pension income where the total income did not exceed £200. These concessions were estimated to cost £1,700,000 in 1937-38 and £2,700,000 in a full year.

Loan expenditure (not included in the budget) would fall from £8,028,968 gross to £7,225,000 gross in 1937-38, and from £7,182,523 net to £5,225,000 net. The net increase in the public debt in 1936-37 was £3,715,205. (H. V. H.)

**Newspapers.** In the offices of the 2,000 daily and 11,000 weekly newspapers of the United States, the year 1937 was chiefly marked by new financial problems, which were the theme of all publishers' meetings and which reached a



CLYDE TINGLEY, governor of New Mexico





SIX U. S. NEWSPAPER COLUMNISTS noted for their comment on politics and economics. Left to right: Mark Sullivan, David Lawrence, Frank R. Kent, Dorothy Thompson (Mrs. Sinclair Lewis), Walter Lippmann, General Hugh S. Johnson

perplexing climax as the year closed. In spite of material gains in circulation and of an increase in advertising income during the first half of the year (which later declined during the "recession"), newspapers faced an unprecedented rise in costs of print paper, wages, taxes and security levies, machinery and supplies. To meet these rising costs, nation-wide campaigns to raise circulation and advertising rates were launched, and December saw the 2-cent newspaper disappearing from the news-stands, replaced by 3-cent and even 5-cent newspapers.

Early in the year a sharp rise in the price of Canadian news print, chief paper supply of American newspapers, was announced, and by fall the increase had amounted to about 17%, with the two leading Canadian paper companies setting the 1938 price at \$48 and \$50 a ton. As a result, two movements were launched (one a co-operation of Texas publishers and the other a \$5,000,000 project) to start manufacture of news print from southern timber—putting into production the results of laboratory experiments of some years before.

While the typographical and other mechanical unions increased their strength and obtained wide-spread wage increases, the growth of unionization of editorial workers through the American Newspaper Guild raised editorial salaries, both in Guild offices and in other newspapers. In June, the Guild, which had in 1936 obtained an American Federation of Labor charter, voted to join the Committee on Industrial Organization, broadening its base to include all unorganized newspaper workers, as well as editorial staff members, and to fight for "the Guild closed shop." Later in the same month, 565 newspaper publishers and executives, representing eleven organizations, met in Chicago and voted to oppose the editorial closed shop as a menace to freedom of the press.

By the close of the year, the Guild had added 27 more contracts, mainly open-shop, to the 23 previously signed, and announced that its membership had increased from about 5,500 to about 11,000. The Guild conducted nine strikes (Long Island, N.Y., *Press*; Bellingham, Wash., *News*; Flushing, N.Y., *North Shore Journal*; Seattle, Wash., *Star*; Decatur, Ill., *Herald and Review*; Brooklyn *Eagle*; Bayonne, N.J., *Times*; Waterbury, Conn., *Democrat*; and Wilkes-Barre, Pa., *Record*). The leading labour case won by the Guild during 1937 was that of Morris Watson, Associated Press employee whose reinstatement was ordered, not

only by the National Labor Relations Board, but also by the U.S. Supreme Court. Meanwhile, the American Press Society, an unaffiliated professional editorial staff organization, started in New York in 1936, gained size with its membership limited to daily newspaper editorial workers of more than four years' experience.

The outstanding news events of the year, on the basis of newspaper space devoted to them, were listed by the three great press associations as follows: (1) Roosevelt loses the supreme court battle; Senator Robinson dies; Senator Black appointed to bench amid Ku Klux Klan controversy; (2) Labour splits and then moves to make up; C.I.O. wages the largest steel strikes in history after employing the sit-down strike to tie up automobile factories; (3) War invades two continents; Japanese-Chinese undeclared war develops into the greatest conflict since the World War; Fascist nations form anti-Communist united front and the arms of five major powers are employed about Spain; (4) The Zeppelin "Hindenburg" burns in the air in front of news cameras killing 36 of 97 passengers and crew; (5) Nature was good to U.S. farmers, but the stock market broke and business receded, disturbing Washington; (6) Duke of Windsor, former king of England, marries an American woman; (7) 427 persons die in explosion of schoolhouse in New London, Texas; (8) Amelia Earhart lost in Pacific on a round-the-world flight; (9) England crowns a king; (10) The Ohio river floods several cities; (11) The blood purge continues in Soviet Russia; (12) Exploratory flights foreshadow new air service linking America and Europe.

Among the changes in ownership of larger newspapers, two trends were noteworthy: (1) The Milwaukee *Journal*, following the lead of the New York *Sun*, the Chicago *Daily News*, and Kansas City *Star*, completed reorganization on a plan of employee ownership. (2) Consolidation among the newspapers owned by William Randolph Hearst marked his 50th year as a publisher and followed the death of Arthur Brisbane on Dec. 25, 1936.

In June, Mr. Hearst merged the New York *American* with the *Mirror*, suspended the Rochester, N.Y., *Journal*, and shifted the Albany, N.Y., *Evening Times* into the morning to reduce competition. In Washington, D.C., he leased both the *Herald* and the *Times* to Eleanor Patterson. On August 14, he merged the International News Service and Universal Service. On Sept. 1, he withdrew a petition for the sale of debenture issues of \$35,500,000. In September he regained the Milwaukee *Sentinel*, consolidated it with the Wisconsin *News*, and sold his interest in the Pittsburgh *Post-Gazette* to Paul Block. A month later he sold



the Omaha *Bee-News*. During the year he reduced his chain from 18 newspapers in 18 cities to 20 newspapers in 14 cities.

Among the noted newspaper men who died during 1937 were: John Ogden, 81, editor of the New York *Times* for 17 years and previously editor of the New York *Evening Post* for 29 years; Fred Fuller Shedd, 66, for many years editor of the Philadelphia *Evening Bulletin* and leader in the American Society of Newspaper Editors; F. E. Ives, 81, Syracuse, N.Y., inventor of half-tone engraving; Frederick Burr Oppen, 80, creator of "Happy Poligan"; Ed Howe, 84, Kansas "Sage of Potato Hill"; Edward Harris, 57, publisher of Richmond, Ind., *Palladium & Item*, and secretary of American Newspaper Publishers Association; and Robert W. Bingham, 66, owner of Louisville, Ky., *Courier-Journal*, and since 1933 ambassador to Great Britain.

Warfare between radio and newspapers subsided with the settlement out of court of the \$1,700,000 suit of Transradio against newspaper competitors. Another blow was dealt to "shopping newspapers" by continued refusal of the Audit Bureau of Circulation to recognize free circulation publications. Growing public action against liquor advertising was evidenced by the refusal of 552 daily newspapers, one-fourth of the total, to carry advertisements of "hard liquor," and among them 178 also barred beer advertising.

Statistics on American newspapers for the year, as given in the standard directories of Jan. 1938, are as follows: The number of English-language dailies decreased 23 to a total of 2,084, including 1,605 evening papers and 479 morning newspapers; but their combined circulation increased to 41,400,000 daily, the highest record, including 25,800,000 in the evening and 15,600,000 in the morning. Sunday newspapers increased 15 to a total of 535 with a combined circulation of 31,000,000. Rural and suburban weekly newspapers decreased 176 to a total of 10,629; semi-weeklies decreased 18 to 359. Foreign language dailies increased to a total of 135 in 24 languages, and foreign language weeklies increased three to 294. A total of 214 daily and weekly negro newspapers were listed. The number of radio stations operated by newspapers increased to 183. (See also ADVERTISING.)

(G. M. Hy.)

**Great Britain and Europe.**—Economic pressure and political activities rather than journalistic developments made 1937 one of the most important years in newspaper history, causing production costs to soar, and forcing many papers on the Continent to increase their selling price, while in Italy the situation was met by Government-decreed reduction of contents.

Political developments led to censorship or suppression in most European countries and had their international reactions. Thus, Mussolini, annoyed by the attitude of most British newspapers to Italian activities in Abyssinia and Spain, practically boycotted the coronation of King George VI in May, withdrawing all Italian correspondents from London; such Italian reports as appeared were only upon minor disturbances, magnifying them into large scale outbreaks. Mussolini also banned the importation of all British newspapers except the *Daily Mail*, *Evening News*, *Sunday Pictorial* (i.e. the "Rothermere" journals), and *Observer*, which followed a pro-Italian policy; this boycott was quietly raised in the year. During May the *News Chronicle* correspondent was expelled from Rome.

In August the British Home Office refused to renew the permits-to-stay of three London correspondents of the Berlin press, and Hitler retorted by expelling Mr. Norman Ebbutt, Berlin correspondent of *The Times*, one reason given being the publication in 1933 of a series of articles in *The Times* on the first year of Nazism, which had been republished by the Friends of European Unity.

Many other journalists in various countries were either expelled

or refused renewal of permits; the Yugoslavian authorities refused in July to renew the permit of Mr. Robert Harrison, Reuter's Belgrade correspondent, and in November, M. Paul Ravoux, chief correspondent of the French news agency "Havas," was expelled from Berlin.

In England, the disappearance of the London *Morning Post* as a separate publication, after 165 years of independent life, was an outstanding event. Lord Camrose, who purchased it, merged it with his *Daily Telegraph* on Oct. 1.

Among other important events during the year was the separation, in January, after 35 years of partnership, of the Berry Brothers' (Lords Camrose and Kemsley) newspaper interests; companies with an aggregate capital of £16 millions and owning 21 newspapers in London and in seven provincial and five other centres, in addition to more than 100 periodicals, were affected. Lord Camrose left the boards of Allied Newspapers, Ltd. and its associated companies, retaining control only of the *Daily Telegraph* and *Financial Times*; Lord Kemsley acquired sole control of the *Daily Sketch*, *Sunday Graphic*, *Sunday Times*, *Sunday Chronicle*, *Empire News*, and of Allied's provincial and five other newspapers.

One month later, in February, Mr. J. S. Elias—later Lord Southwood—the one-time newspaper boy and printer's clerk who had become governing director of Odham's Press, Ltd., publisher of the *Daily Herald*, the *People*, *John Bull*, etc.—acquired control of the aristocrats of British periodical journalism, Illustrated Newspapers, comprising the *Illustrated London News*, *Sphere*, *Bystander*, *Tatler*, etc. Associated with him in the deal, which was said to involve something like £500,000, was Sir John Ellerman, of the Ellerman shipping line.

It is difficult to say to what extent the aggregate sales of British newspapers appreciated during 1937, since full figures are not available. The *Daily Herald* maintained that its net sales throughout the year exceeded 2 millions per day; the *Daily Express* announced a December average of 2,404,285 compared with the year's average of 2,329,099; the *Daily Mail's* December certificate showed an average of 1,602,209, compared with 1,717,133 for Dec. 1936; and the *News Chronicle* averaged 1,323,472 compared with the 1936 average of 1,327,561. The Dec. 1936 average of the *Daily Telegraph* was 530,300.

The first sales certificate issued for the combined *Daily Telegraph* and *Morning Post* was for October, and showed a figure of 630,000, or approximately 104,000 higher than the last previous certificate issued for the *Daily Telegraph* alone; the *Morning Post's* last issued figure was 116,734, being the average for July 1936–June 1937, inclusive. The end of the year saw the *Daily Telegraph* and *Morning Post's* December average at 634,743. *The Times* averaged 192,220 during the year, compared with 190,745 during 1936 and with 186,325 during 1935.

The most important press event in Germany was the formation of the semi-official concern, Vera, to acquire independent newspapers, and force them into subservience to the existing régime. Transference to Vera was not directly forced; but since, under the Press Law, only Nazi party interests can risk acquiring newspapers, the independent proprietor had no alternative to selling to Vera after suppression, censorship, and the impossibility of publishing anything except what is in the interest of the Government, had reduced the value of the property to nil. (L. H. D.)

**New York**, one of the original States of the United States, popularly known as the "Empire State"; area, 49,204 sq. mi. (1,550 sq. mi. water); population according to the U.S. census of 1930, 12,588,066, and on July 1, 1937, estimated at 12,959,000. Capital, Albany, 127,412. Other cities in the State with more than 100,000 residents in 1930 were: New York city,



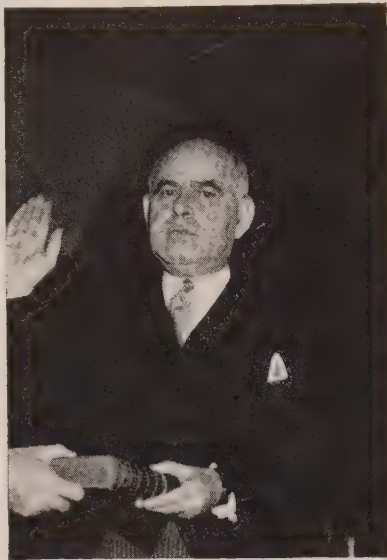
6,930,446; Buffalo, 573,076; Rochester, 328,132; Syracuse, 209,326; Yonkers, 134,646; and Utica, 101,740. Of the State's population 10,521,952 are urban, or 83.6%; 9,958,744 native white; 3,191,549 foreign-born white; 412,814 Negro. The population density of 83.6 inhabitants per acre was exceeded only by Rhode Island and Massachusetts.

**History.**—The chief executive officers of the State during the year 1937 were governor, Herbert H. Lehman; lieutenant governor, M. William Bray; comptroller, Morris S. Tremaine; attorney-general, John J. Bennett, Jr. All are members of the Democratic Party. In the legislature there was a division of strength between the two major political parties. The senate consisted of 29 Democrats and 22 Republicans and the president pro tem was John J. Dunnigan, a Democrat. The assembly consisted of 76 Republicans and 74 Democrats and the speaker of the assembly was Oswald D. Heck, a Republican.

During the regular 1937 legislative session a total of 4,678 bills were introduced. Of those finally passed and sent to the governor, 927 were signed and became law and 272 were vetoed. The highlights of the session were the passage of a social security program, many important labour bills, the enlargement of the health program, the enactment of a "career" bill for State employees and the defeat of the Federal Child Labor Amendment.

Among the more important bills to become law in 1937 were: creation of a Labor Relations board to promote equality of bargaining power between employer and employee; establishment of a State board of mediation within the Labor department for the prevention and settlement of labour disputes; payment of income taxes by constitutional public officials of the State; regulation or prohibition of the transportation in New York of goods manufactured or produced with child labour; prohibition of duress, intimidation and coercion of employees through the means of the payroll envelope or otherwise; establishment of a division of minimum wage in the Labor department for women and minors; a permissive bill for women to sit on juries; extension for another year of the moratorium on mortgage foreclosures and the provisions of law relating to deficiency judgments; a "career" bill for State employees, providing for their classification within grades with annual salary increments, promotion to higher grades being made possible only after civil service examinations; provision for a million dollar revolving fund from which the State Mortgage Commission can advance moneys for the rehabilitation of properties against which mortgage certificates have been sold.

In addition, six proposed constitutional amendments were passed by the legislature and transmitted to the secretary of State for submission to the people at the general election of 1937. The following were approved and became part of the State constitution: An amendment making the term of governor and lieutenant governor four years, instead of two years; an amendment making the term of assemblyman two years instead of one year; an amendment permitting sheriffs to succeed themselves in office;



HERBERT H. LEHMAN, re-elected governor of New York for a third term

an amendment permitting a defendant in a criminal case to waive a jury trial except in those cases in which the crime charged may be punishable by death, and providing also that a verdict may be rendered by five-sixths of the jurymen in any civil case.

The legislature of 1937 refused to ratify the Child Labor Amendment to the Federal Constitution. In addition to this, the following important bills were killed or defeated in the legislature: legalization of pari-mutuel race track betting; reapportionment of senate and congressional districts; outlawing of sit-down strikes and requiring labour unions to file annual financial statements; establishment of a Department of Justice and Division of Crime Prevention in the State; repealing the requirement that teachers take an oath or affirmation to support the State and Federal Constitutions; state regulation of fee-charging employment agencies.

An extraordinary session of the legislature was called by the governor in December at the request of the mayor of the City of New York for the purpose of enacting a new municipal code. The code was enacted by the legislature and approved by the governor. The election of 1937 had a considerable effect on the political make-up of the State assembly. At that election 84 Republicans, 61 Democrats, 4 members of the American Labor Party and one American Labor Party-Republican were elected to the 1938 assembly.

**Education.**—State educational developments of 1937 were featured by a court decision upholding the right of the State Department of Education to exercise control over all institutions, by the discontinuance of the joint legislative committee investigating communism in the schools, by reorganization of the department into three main branches—education, higher education, and financial and administrative, by legislation extending the principle of teacher tenure to village school districts having a population of 4,500 or over and employing superintendents of schools, and by legislation extending the scope of education through making definite provision for instruction in highway safety and traffic regulation. Brief statistics for 1936 indicated that over two and a quarter million of a school population of 3,918,047 attended public schools valued at \$1,005,842,381 and were under the direction of 87,234 teachers.

Detailed statistics for 1935-36 released during the year revealed that at that time there were 11,218 public schools including 997 high schools, 163 universities, colleges and professional schools. Public school expenditures totalled \$327,228,386 of which \$119,729,480 was contributed by the State. Enrolment figures were: all public schools, 2,292,497, including for high schools, 654,312; private schools (273 reporting), 90,317; all universities, colleges and professional schools, 138,973.

**Charities and Correction.**—Statistics for the fiscal year 1936-37 indicate the importance of New York State institutional activities. Of non-educational expenditures during that year, the Departments of Mental Hygiene, Public Works, Social Welfare and Correction consumed almost one-half. At this time there were 82,825 inmates in mental institutions, 10,762 in State prisons, 2,104 in reformatories and 1,475 in institutions for defective delinquents.

**Finance.**—The financial situation of the State continued to improve during 1937. On June 30, 1937, the accumulated State deficit had been reduced to \$10,198,452, having been reduced over \$40,000,000 for each of the last two fiscal years. Receipts of \$360,870,831 for the fiscal year 1936-37 were nearly \$20,000,000 over the official estimate and more than balanced the expenditures, which amounted to \$315,191,127. The leading source of revenue was the personal income tax which produced \$104,892,155. Other important levies in the order of their yield were motor fuel, \$43,584,556; motor vehicles, \$35,470,820; stock



transfer, \$33,847,471; inheritances and estates, \$33,580,613; corporations, \$30,860,589; franchises, \$27,515,380; and alcoholic beverages, \$13,102,400. Nearly one-half the expenditures (\$149,78,982) were devoted to local purposes. Purely State expenditures were largely for State institutions (\$50,315,031), debt service (\$46,712,520) and administrative expenses (\$34,430,389). The State's net debt was \$547,673,716. Of this, \$144,855,000 was for unemployment relief; \$63,634,795 for canals; \$46,354,873 for highways; \$85,510,000 for grade crossing elimination; and \$70,99,000 for general State improvement.

Property within the State was assessed at \$25,548,805,000 for 1937 representing a true value of \$30,254,216,000; but there was no State property tax. Three important tax measures were passed during the year—an increase in the gasoline tax from three to four cents a gallon, a 2% tax on public utility gross receipts and repeal of clauses exempting State constitutional officers from the State income tax assessment.

**Banks.**—On June 30, 1936, New York State had 911 banks. Of this total, 458 were national and 453 were State banks (included in this figure for State banks are banks, trust companies, savings banks and private banks). The combined capital of these banks was \$925,878,000, the total resources were \$23,174,205,000 and deposits amounted to \$19,792,598,000.

**Agriculture.**—The latest census (1935) reveals that New York possessed 177,025 farms, covering 18,685,741 ac., with land and buildings valued at \$1,045,391,981. The estimated cash farm income from sales of crops and livestock and livestock products, in 1937, was \$310,450,000, which placed New York ninth among the United States in sales value of farm products. New York ranked third in the country in milk output, during 1936, with 887,600,000 pounds. Leading crops were truck crops, with farm cash income in 1937 of \$25,180,000; orchard and vineyard fruits, including apples, peaches, pears, cherries and grapes, \$20,325,000; potatoes \$14,850,000; other crops \$41,845,000. Income from livestock and livestock products in 1937 totalled \$208,250,000, the most important sources being milk, cattle and calves, poultry and

important crops produced in 1937 were: Corn for grain, silage and fodder, 23,856,000 equivalent bushels; wheat, 8,276,000 bu.; oats, 18,800,000 bu.; buckwheat, 2,448,000 bu.; hay, 5,749,000 tons; dry edible beans, 1,264,000 sacks of 60 lbs.; potatoes, 28,700,000 bu.; apples, 24,700,000 bu.; peaches, 1,806,000 bu.; pears, 1,050,000 bu.; grapes, 89,100 tons; cherries, 21,750 tons.

**Manufacturing.**—According to statistics released by the United States Census Bureau in July, 1937, New York had 33,638 industrial establishments in 1935 employing 895,991 people and paying \$1,018,243,211 in wages. Manufactured products for the year were valued at \$6,094,393,038. The leading industry was men's clothing with a product valued at \$883,375,777. This was followed by printing and publishing (\$496,339,171), men's clothing (\$372,054,753), bread and other bakery products (\$222,795,954), and motor vehicles and parts (\$214,791,230).

**Minerals.**—Excluding mineral products manufactured in the State from material mined in other States, New York's mineral output was valued at \$58,408,999 for 1935. The leading items were petroleum, \$9,080,000; stone, \$7,420,225; clay products, \$63,916; and cement, \$6,612,399; while the production of natural gas, sand and gravel, gypsum, and salt exceeded five million dollars in each case.

**Transport and Commerce.**—New York far surpassed the other States of the United States commercially. The U.S. Customs Office reports that in 1935 the value of goods imported at customs offices in the Port of New York district amounted to \$33,125,000 or 50.67% of the total for the nation. During the year imports in the St. Lawrence district, which includes all

New York State ports on the river, were valued at \$21,493,000 and imports at the Buffalo and Rochester districts were valued at \$75,043,000 and \$3,841,000, respectively. Exports for the year from the Port of New York district amounted to \$790,336,000 and constituted 34.62% of the total for the nation. Exports in the St. Lawrence district during 1935 amounted to \$25,803,000 and in the Buffalo and Rochester districts were \$59,805,000 and \$5,299,000 respectively. Traffic on State canals during 1936 exceeded 5,000,000 tons.

During 1936 there were 2,514,041 motor vehicles registered in the State, with 2,792,242 operator and 747,626 chauffeur licences issued. Roads in the State covered 84,170 mi. on January 1, 1937. Of the total, 50,285 mi. were improved and work was performed on 2,232 mi. during the year 1937.

(H. H. L.)

**New York City.** For its 7,400,000 residents, 360,000 daily commuters and 100,000 daily visitors New York city's Government set several new achievement records in 1937 and incidentally threw into the arena of national politics two possibilities for presidential nomination in 1940—the re-elected mayor, Fiorello H. La Guardia, and the newly elected district attorney for New York county, Thomas E. Dewey. So notable, however, were the service gains and the improvements in reporting them that even if La Guardia and Dewey had been defeated, 1937 would have been a notable year. Twenty district health centres were organized for progressively educating the people against mortality and sickness. Safe milk was cheapened. Four key death rates—mothers in childbirth, infants, typhoid and tuberculosis—were reduced to New York's lowest, despite extensive unemployment, relief, poverty and overcrowding in unfit and inadequate housing. Typhoid was so rare that it was hard to find cases for training young physicians. Infant mortality was 43.7 in a thousand; it was 100 in 1900.

Emergency relief became a municipal activity. For all home relief but mothers' pensions, an experimental concentration was ordered under one set of workers where formerly each type had its separate staff—family, old age security, veterans, blind, etc.

An experimental high school for specially talented children was started. The need for additional vocational and trade schools was recognized in both operating and capital budgets. Anti-Tammany members gained control of both the education and the higher education boards. A fourth city college was started. An efficiency self-survey of the four colleges was begun, and a fifth city college promised. The radio station WNYC was enlarged and gave more attention to government.

Specially trained assessors of utilities and railroads were added to the city staff after nation-wide competition, in order to increase taxable valuations. Machines partly displaced hands in writing 14,000,000 yearly property descriptions and tax computations. General real estate valuations were widely above sales levels; inequitably low assessments were also extensive, Columbia university netting 10.3% on the tax valuation of leased Rockefeller Center lands assessed at \$32,000,000, while other properties netting nothing or 3% were legion. Governor Herbert H. Lehman declined to hear charges against Mayor La Guardia of inequitable and inefficient assessing.

Budget appropriations for 1938 rose to over \$682,000,000; over \$93,000,000 of appropriations being omitted from the advertised "budget." Emergency taxes remained, including a half-cent increase in water rates. Gross debt rose to almost \$2,400,000,000; net debt to \$1,908,000,000; borrowing margin fell to \$81,000,000.

Civil service expanded and was strengthened in 1937. Party-named election inspectors and clerks were compelled to qualify by examination. Emergency relief workers were denied exemption from competitive examination. Scholarships at engineering



colleges were given to firemen and sanitation employees ambitious to qualify for higher posts. "In-service" training with civil servants was started by several departments. Eligibles for patrolmen were certified for firemen to save examination costs. Important disputed questions were settled by the highest court. A nine-point operation-research program was advanced. Increased co-operation with universities was outlined and a university director of studies into civil service efficiency was made civil service secretary. An electric scoring machine was introduced which scored 800 short-answer examinations per hour. A lower court ruled twenty-five an unreasonable age maximum for stenographer applicants. Former Mayor Walker's restoration to the city payroll with resulting pension after short service was prevented by popular indignation and a taxpayer's suit. Professional examiners' salaries were increased. Mandatory salary increments for city workers under \$2,400 began. Pre-depression pay rates were restored. Hospital nurses won an eight-hour day.

Public works multiplied—parks, playgrounds, riverways, bridges, tunnels, subways. The old eye-sore City Hall post office was abandoned for early destruction. Several enclosed markets displaced push-cart markets. A new "Tombs" prison was ordered. Extensive slum-clearance projects were arranged with Washington and two were opened. A new water system to take water from the Delaware river was attacked in court as a \$750,000,000 superfluity.

A new charter took effect in 1937: department heads must henceforth work full time and have no other remunerative employment, unless unsalaried; a council of 26 was elected in place of an aldermanic board of 65; the council was elected by proportional representation within boroughs with minorities winning half the seats; a city planning commission will substitute a master-plan for present hit-or-miss building under special pressures; public works go under a single head, who will supervise through borough deputies; building and housing inspection are under one commissioner, the tenement house department disappearing; an appointive treasurer with accounting duties supplants the former chamberlain; the comptroller audits and "controls"; an administrative code of former charter provisions, laws and ordinances—3,350 pages—supplements and implements short-charter powers; an assistant mayor will free the mayor from many details.

Politically 1937 marked several revolutions. The mayor pledged himself to make New York a "union city." Labour unions made him mayor again. Picketing was ubiquitous; a grand jury denounced it as a nuisance and an injury to business. Police interfered with sit-down strikes only if employers so demanded. A five-day week for city employees was vetoed, not for economy but because as voted it meant a four-day week for many. City

officers helped organize the American Labor Party in favour of the mayor; two national labour groups gave the mayor 30,000 more votes under the labour emblem than his plurality of 453,000. They also drove Tammany out of the prosecutor's office in New York county; an aide of the special prosecutor and racketeer, Dewey, was named commissioner of investigation by the mayor and told to do for other counties what had already been done for New York county.

Tammany's defeat was so complete, except for councilmen, that its mayoralty candidate said later that the only way to salvage the Democratic Party in New York was to drop the name Tammany and move headquarters to a new locality with new connotation. The routing of Tammany by the labour-Republican-fusion coalition, and by its own illiterate and shallow campaign, despite support by national and State Democratic machines, killed two pernicious adages—that in New York a reform mayor never succeeds himself and that even an indignant public does not want anti-Tammany prosecutors. (See also TAMMANY HALL.)

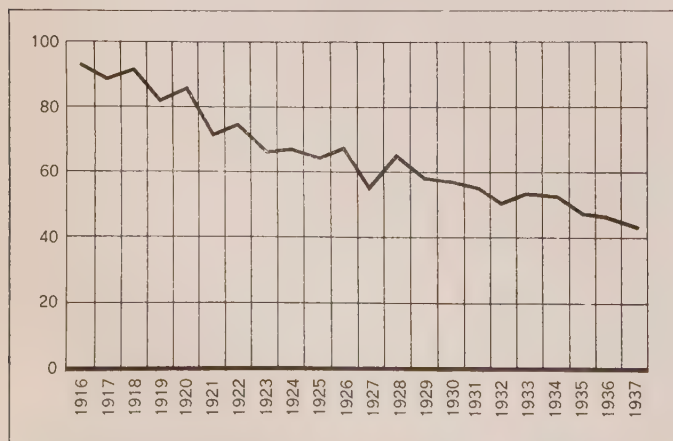
(W. H. AL.)

**New York University** attained a record enrolment in 1937 of 43,510, including 7,000 liberal arts, 7,200 graduate, and 24,000 professional students. A private institution, supported partly by endowment and largely by student fees, it operated for the seventh consecutive year on a balanced budget, with nearly 90% of the aggregate expenditure of fifty-one and a half million dollars of the seven-year period covered by fee revenue. While adhering to traditional university concepts and practices, New York university has stressed ever since its establishment in 1831 the pragmatic features of its program through consistent integration of its activities with the practical affairs of everyday life. Its College of Engineering, for example, has just entered upon a co-operative program with the city of New York for training sanitary engineers. The medical school is expanding its work in public health and nursing by similar co-operation. The School of Retailing is offering a combined program of alternate study and employment in co-operation with eighteen great metropolitan stores. In the enormously developing field of adult education the Division of General Education has conducted within the year 113 courses at fifty-four centres in five states in co-operation with local authorities. The university acquired six additional buildings in 1937. (H. W. CH.)

**New York World's Fair:** see FAIRS AND EXHIBITIONS.

**New Zealand, Dominion of,** a self-governing member of the British Commonwealth of Nations, situated in the southern hemisphere about 1,200 mi. to the south-east of Australia. The main group of three islands lies between lat. 34° 30' S. and 47° 10' S., and long. 166° E. 179° W. Outlying islands within the jurisdiction of New Zealand include Auckland islands (uninhabited), Chatham islands, Cook islands, Niue, Kermadec islands (mostly uninhabited), Ross Dependency in the Antarctic (between long. 160° E. and 150° W., and south of lat. 60° S.), and the Union (Tokelau) islands. Capital, Wellington (North island); ruler, King George VI, (*q.v.*), represented by a governor-general, Viscount Galway, G.C.M.G.; national flag (merchant ensign), a red ensign, with the Union Flag in the quarter and four white stars in the field.

**Area and Population.**—Area: North island, 44,281 sq. mi.; South island, 58,092 sq. mi.; Stewart island, 670 sq. mi.; Chatham islands, 372 sq. mi.; Auckland and other neighbouring islands, 30 sq. mi.; Cook and other South Pacific islands, 180 sq. mi.; Niue, 100 sq. mi.; Kermadec and Tokelau islands, 17 square miles. Pop.



INFANT MORTALITY rate in New York city (deaths under one year per 1000 births)



lation: (March 1936 census) North island, South island, Stewart island, with islets, and Chatham island, 1,573,810, including 2,326 Maoris; Cook group, 16,350; Tokelau island, 1,170; Kermadec island, 2; est. pop. (June 1937), New Zealand proper, 587,211, including 84,474 Maoris; urban pop. (1936 census), 9.5%. Leading cities (pop., April 1937): Auckland (q.v.) 214,400, Wellington 151,700, Christchurch 133,200, Dunedin 82,100.

**History.**—Labour Cabinet: prime minister, minister of external affairs, native minister, etc., M. J. Savage; minister of education, health, etc., P. Fraser; minister of finance, customs, marketing, etc., W. Nash; minister of industries and commerce, railways, etc., D. G. Sullivan; attorney-general, etc., H. G. R. Maori; minister of labour, etc., H. T. Armstrong; minister of internal affairs, etc., W. E. Parry; minister of mines, etc., P. C. Webb; postmaster-general, etc., F. Jones; minister of agriculture, etc., W. Lee Martin; minister of lands, etc., F. Langstone; without portfolio, M. Fagan; parliamentary under-secretary in charge of housing, J. A. Lee. The legislature consists of a legislative council of 38 members, nominated by the governor-general, and an elected House of Representatives of 80 members, including four Maoris elected by native voters. There was no general election in 1937.

The most important internal developments were in the social and economic field. A serious strike of workers in freezing works at Auckland was ended on terms favourable to the workers. The Government's housing program aiming at the building of 2,500 houses in 1937 and 5,000 per annum thereafter, was pressed forward.

**Trade, Industry, and Communications.**—The gross value<sup>1</sup> of farm produce in 1935–36<sup>2</sup> was £60,500,000, comprising: agricultural produce, £7,400,000; pastoral produce, £28,800,000; produce of dairying, poultry and bees, £24,300,000. Value of lumber exported (1936), £366,350. Value of fish exported (1936), £31,677. Value of mineral production (1936): gold, £1,272,587; coal, £2,140,217. Exports (1936–37)<sup>3</sup>: £64,600,000, including £18,800,000 worth of wool. Imports, £50,100,000. Of the trade balance of £14½ millions, only about £10 millions was required for debt service, but bank funds abroad fell by £7 millions, suggesting a net outflow of capital.

The gross output of factory industry was valued at £90,014,748 in 1935–36, the added value being £30,074,355. Food industries accounted for £50,704,917 of the gross total and for £9,386,357 of the net. The number of unemployed at Sept. 25, 1937, was 36,450. The railway mileage open in March 1937 was 3,509 mi., of which all but 189 mi. was Government owned. Railway operating revenue in 1936–37 totalled £6,903,604, and operating expenditure £6,338,385. The mileage of paved or surfaced roads was 1,834 mi. at March 31, 1936, including 12,114 mi. of main highways whose maintenance cost £1,096,754 in 1936–37.<sup>3</sup> Steam and motor tonnage on the New Zealand register at Dec. 31, 1936, totalled 183,005 tons gross and 96,405 tons net. Excluding coast-guard vessels, 2,889,708 tons of shipping were entered into New Zealand ports in 1936. During the 1937 Imperial Conference (q.v.), the United Kingdom, Australian and New Zealand Governments discussed the problem of competition from subsidized American ships on the trans-Pacific routes.

Internal air services have advanced rapidly during the past two years. Their route mileage at June 1937 was 1,623 mi., and their operating mileage in 1936 was 897,106 miles.

**Banking and Finance.**—The New Zealand pound (£NZ) (with sub-units as in English money) had throughout 1937 a value 20% below that of sterling, i.e. approximately 16s. sterling. The currency reserve consisted (Dec. 20, 1937) of £2,800,000 (nominal)

of gold and £16,880,000 of sterling exchange, the ratio to all sight liabilities being 70.8%. The active note circulation in Sept. 1937 was £9,300,000; commercial bank deposits, £65,100,000.

The national accounts for 1936–37 (budget year ends March 31) closed with a surplus of £472,000, expenditure totalling £30,675,000 and revenue £31,147,000. The minister of finance, in his budget speech on Sept. 28, forecast an increase of revenue to £34,778,000 in 1937–38, and of expenditure to £34,427,000. Social services (excluding unemployment relief) would cost £12,168,000 instead of £9,913,000, and defence would cost £1,600,000 instead of £1,192,000. The public works program was raised to £17,367,000. Taxation was unchanged.

**Defence.**—The New Zealand division of the Royal Navy, maintained by the Dominion Government and manned in the lower ranks by New Zealand personnel, consists of two cruisers and smaller vessels. There is a very small permanent land force, including 106 officers and 436 instructors. The strength of the volunteer territorial force on Aug. 1, 1937, was 8,282. The air force similarly comprises a permanent cadre and a voluntary territorial force. It was reorganized in 1937; a reserve of pilots was established, and a scheme of short-service commissions in the Royal Air Force for New Zealand pilots was inaugurated.

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**Nicaragua**, a Central American republic; language, Spanish; capital, Managua; president, Anastasio Somoza. The area is 49,200 square miles. Population (estimated, 1935) 638,119. The chief cities are: Managua (60,342); León (47,234); Granada (18,000). President Somoza took office Jan. 6. In August, when Nicaragua issued a stamp showing her interpretation of the Honduras boundary line a two-year dispute with Honduras was brought to a head, with threatened hostilities on the border. Costa Rica, the United States, and Venezuela proffered mediation, with the result that on December 10 the two disputants agreed to accept arbitration. In July attention was focused again on the proposed Nicaragua canal when President Somoza offered the United States military privileges in return for funds with which to canalize the San Juan river. Nicaraguan agriculture suffered heavily from a locust plague of several months duration. By November it was reported that half the cotton, corn, rice, and bean crops had been destroyed.

Rising prices, augmenting living costs, and tight credits kept business at a low level throughout 1937. Nevertheless, in December, President Somoza announced a balanced budget and promised agricultural relief. Nicaragua has 171 mi. of Government-owned railroad, and an undetermined amount of short privately-owned lines. There are approximately 900 mi. of highways. In Nov. 1937, the Government called for bids for further highways to be constructed over a period of years at a cost estimated at \$10,000,000. Imports for 1935 totalled \$5,072,876, exports \$5,658,113, representing a 9.1% increase. Principal imports are textiles, foodstuffs, and machinery; principal exports are coffee, bananas, gold. Foreign trade is largely with the United States. In 1936–37, the total United States trade aggregated nearly \$6,000,000, an increase of one-third. The monetary unit is the cordoba (value: approx. 41.5¢ U.S.). There are approximately 700 schools, with an enrolment of about 44,000. Budgetary allotments from the Government are very small. (L. W. BE.)

**Nickel.** The world total nickel output, 90% of which is from Canada, was 60,200 metric tons in 1929, dropped to 19,500 tons in 1932, and increased to about 88,000 tons in 1936. Of the minor production, New Caledonia averages about 5,000 tons annually; Greece, India and Norway range from 1,000 to

<sup>1</sup>Unless otherwise stated, values are expressed in New Zealand currency.

<sup>2</sup>Year to June 30.

<sup>3</sup>Year ended March 31.



1,500 tons; the Soviet Union started production in 1934, and has increased to an output of about 2,000 tons; and Brazil, starting in 1933, has reached 500 tons. The United States has no primary nickel production, but turns out 100-500 tons yearly as a by-product in copper refining. The Canadian output dropped from 50,000 tons in 1929 to 13,800 tons in 1932, with a recovery to 77,000 tons in 1936, and another new record high of just under 100,000 tons in 1937.

The normal trend of industrial recovery has been supplemented by a rapidly increasing demand for nickel alloy steels, especially stainless steels, and by the demand arising from the ever-expanding rearmament programs. The increasing consumption of the metal encourages the development of new sources, in spite of the dominant position of the established Canadian producers, and active efforts toward commercial operation are being made on deposits in British Columbia and Celebes (Netherlands East Indies). (G. A. Ro.)

**Niemöller, Martin** (1892- ), German theologian, born at Lippstadt in Westphalia on Jan. 14, 1892; son of Pastor Henry Niemöller. Distinguished during the World War as a submarine commander, he later turned to farming and then to theology, and eventually became pastor of the wealthy Dahlem parish of West Berlin. As an ardent nationalist and opponent of communism, Niemöller at first welcomed National Socialism and even joined the party, but in the summer of 1933 events turned him into a defiant opponent of the Nazi effort to bring the Lutheran Church under the domination of the Totalitarian State. The Protestants had drawn up a new constitution for a united Protestant Church and a committee chose the highly-respected Friedrich von Bodelschwingh as its Reichs Bishop. The Nazis rejected him, insisted on a national Protestant election, and by using strong-arm methods and the votes of people who never went to church elected Hitler's candidate, Ludwig Müller, an army chaplain but hardly a suitable man to be Reichs Bishop. Niemöller also objected to the placing of Alfred Rosenberg with his pagan "Myth of the Twentieth Century" in charge of the Nazi party's cultural affairs, and to the capture of the church youth organizations by the neo-pagan Hitler youth leader, Baldur von Schirach. Niemöller therefore formed the Pastor's Emergency League of some 7,000 Protestant pastors, became the leader of the more defiant wing of the opponents of Nazi control over religion known as the Confessional Church (*Bekennniskirche*), and helped draw up its famous "Six Principles" at the Synod of Barmen in May, 1934. His theology is the Gospel of Jesus as it is laid down in the Holy Scriptures and Protestant creeds or confessions of the 16th century. He continued to preach courageously at Dahlem against Nazi totalitarian control over the church until July 1, 1937, when he was arrested and imprisoned. Although 120 other imprisoned pastors were set at liberty on Christmas Eve, 1937, Niemöller was not among them; presumably the Nazis did not dare bring him to trial until religious and political passions abated. See GERMANY; and Niemöller's autobiography, *Vom U-Boot zur Kanzel* (Berlin 1934), and his collected sermons, *First Commandment* (LONDON 1937). (S. B. F.)

**Niger:** see FRENCH WEST AFRICA AND THE SAHARA.

**Nigeria.** A British crown colony and protectorate in West Africa on the northern shore of the Gulf of Guinea, bounded W. by Dahomey, N. by the French Niger colony, and E. by the Cameroons. The British mandated territory of the Cameroons (*q.v.*) is united with it for administrative purposes. The territory in the neighbourhood of Lagos forms the colony of

Nigeria; and two groups known as the Northern and Southern provinces form the protectorate. Government is "indirect" through native authorities, the most important of these being the emirs of Kano and Sokoto. Governor, Sir B. H. Bourdillon, K.C.M.G., K.B.E. Capital, Lagos.

**Area and Population.**—Total area, including the Cameroons, 372,674 square miles. (Colony 1,381 sq.mi.; Northern provinces 281,778 sq.mi.; Southern provinces 89,515 sq.mi.); total pop. 19,928,171 (Colony *c.* 333,000, Northern provinces, *c.* 11,303,500; Southern provinces *c.* 8,140,600). The principal towns are Lagos, Port Harcourt, Kano, and Calabar. Northern Nigeria is preponderantly Mohammedan. The two Boards of Education for the north and south ensure a unified system between the education department, the missions, and native administrations. There is a higher college at Yaba, and two Government middle schools at Ibadan and Umahia which, with King's college, Lagos, provide candidates for the higher college.

**Trade and Communications.**—The Nigerian railway has a length of 1,905 miles. The Western line runs from Lagos to Nguru; the Eastern starts from Port Harcourt and joins the Western at Kaduna. There are 3,775 mi. of gravelled roads usable in all seasons; a Government telegraph system; 21 telephone exchanges and 4 trunk lines. A radio distribution service by land line was inaugurated in Dec. 1936. Work has started on aeroplane landing grounds at Maduguri, Kano, Kaduna, Minna, Oshogbo, and Lagos.

Apart from a motor transport strike at Lagos in mid-January, few events of note occurred during 1937. Nigeria decided to contribute £75,000 to the cost of the British rearmament program; and on March 31 the first conference of the native rulers of the Southern provinces took place, on the lines of the provedly useful conferences between Northern rulers.

Prices of produce advanced during 1936; record tonnage was reached in the export of palm oil, palm kernels, cocoa, and cotton lint. Total exports for 1936 were valued at £11,601,223, and imports at £7,735,622. British silver coins, and West African currency Board Notes and coins are in circulation. Revenue for 1936 was £5,305,104, and expenditure £4,823,650.

**Nine-Power Conference.** This conference originated in the League assembly's resolution of Oct. 6, which invited League members, signatories of the Nine-Power Treaty of 1922, to consult together as provided in that treaty, regarding the Chinese-Japanese conflict. In the hope of securing Japanese participation, the Belgian Government was asked, at the suggestion of the United States, to hold the conference at Brussels, and on Oct. 15 invitations were issued, on behalf of the British and U.S. Governments, to all signatories of the treaty—China, Japan, Belgium, France, Italy, the Netherlands, Portugal, U.S.A., the United Kingdom and the Dominions (signatories by virtue of the Statute of Westminster), and subsequent adherents—Bolivia, Denmark, Mexico, Norway, and Sweden. The Japanese declined this invitation on Oct. 27, saying that the League had failed to take account of Japan's "just intentions" and had cast reflections on her honour. Germany and the U.S.S.R. were then invited, only the latter accepting.

The conference opened on Nov. 3, and the principal speakers (except the Italian and Soviet delegates who, though for different reasons, were sceptical of the conference's value) stressed the importance of Japan's collaboration in the search for a peaceful solution of the conflict, and emphasized their direct interest in the restoration of stable conditions in the Far East.

The suggestion of a small mediation committee having failed to gain acceptance, the conference despatched on Nov. 6 a final appeal to Japan to reconsider her decision, reasserting the right of



the other signatories to consult together. The Japanese Government replied negatively on Nov. 12, declaring that intervention by third parties would only excite public opinion and render a solution more difficult, but giving an assurance that the interests of third parties would be respected.

Its efforts to conciliate Japan thus rebuffed, the conference, on Nov. 15, adopted a declaration, by 15 votes to 1 (Italy), with Denmark, Norway, and Sweden abstaining, stating that there was no warrant in law for the Japanese aim of changing by armed force the policy of China, and that the powers must consider what was to be their common attitude in the circumstances.

The conference adjourned on Nov. 24 *sine die*, after adopting a report on its work and a declaration reiterating the general principles already enunciated. Provision was made for its recall should the chairman or members so recommend. (See also CHINESE-JAPANESE WAR; INTERNATIONAL LAW: *War in China*.)

(S. A. HE.)

**Nitrates.** There are small deposits of nitrate-bearing earth or shale in China, Egypt and Spain, which are locally used to a small extent for fertilizer, and an output of 6,000-8,000 tons of potassium nitrate in India, but the only natural nitrates exploited on an extensive scale are the caliche beds of northern Chile, which carry 10-25% of sodium nitrate, and which supplied the bulk of the world's nitrate requirements for a century. The maximum output attained was 3,238,000 metric tons in 1929, declining to 439,000 tons in 1933, with a recovery to about three times that amount in 1936. In addition to the general industrial depression, the Chilean industry faced even more troublesome factors in the development of other sources of nitrogen, particularly that recovered in the by-product coking of coal and the synthetic product derived from the nitrogen of the air. Although the beginnings of these competing sources date back to before the World War, the first real progress was an outgrowth of the war, when Germany was cut off from supplies of Chilean nitrate, and was forced to push the development of the synthetic processes. Steady progress was made following the war, spreading to other countries, and the combination of these forces gradually wore down the natural nitrates industry to a point where in 1929 it furnished only 23% of the world supply, and then the depression finished the job, with Chilean nitrate in 1933 supplying only 4% of the total. The construction of synthetic plants has now reached a point where their capacity is more than sufficient to supply the entire demand for combined nitrogen, and the natural nitrate industry survives only through the tolerance of its synthetic competitor.

(G. A. Ro.)

**Nobel Prizes.** The following awards were made in 1937: *Physics*—Dr. Clinton J. Davisson of New York, and Prof. George P. Thomson of London, for experimental discovery of interference phenomena in the irradiation of crystals by electrons.

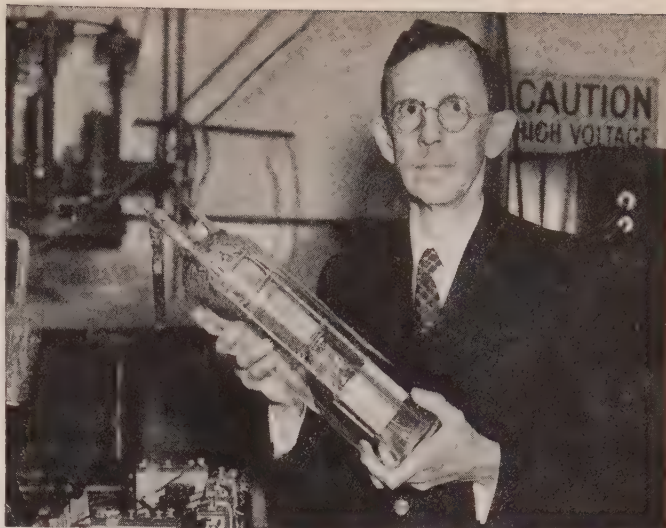
*Chemistry*.—Prof. W. N. Haworth of Birmingham, for research on carbohydrate and vitamin C, and Prof. Paul Karrer of Zürich for research on carotinodes and flavins and vitamins A and B<sub>2</sub>.

*Medicine*.—Prof. Albert von Szent Gjörgé, University of Szeged, Hungary, for research in connection with vitamin C.

*Literature*.—M. Roger Martin du Gard, French novelist and critic, author of *Les Thibault*.

*Peace*.—Viscount Cecil of Chelwood, president of the League of Nations Union. (See also LITERARY PRIZES.)

**Non-Intervention Committee.** The Non-Intervention Committee was formed to implement the agreement not to intervene in the Spanish Civil



DR. CLINTON JOSEPH DAVISSON, co-winner of the 1937 Nobel Prize for physics

War, which, on French initiative, had been reached among the leading European Powers. The Committee's meetings have been held in London, the first of them being held early in Sept. 1936. Twenty-six nations were represented at the first meeting, and this number was later brought up to 27 by the adhesion of Portugal. The British Foreign Secretary, Mr. Eden was elected chairman, but at most of the meetings Lord Plymouth has deputized for him; members of the Committee, other than the United Kingdom, have normally been represented at it by their respective *Chefs de Mission* in London. One of the Committee's first decisions was to appoint a Chairman's Sub-Committee to assist the chairman in day-to-day work, the members being Belgium, the United Kingdom, Czechoslovakia, France, Germany, Italy, Sweden, and the Union of Soviet Socialist Republics. This Sub-Committee is composed of those Powers, other than Portugal, who, by reason of their importance, geographical position, or the size of their armaments industry, are most directly concerned with the policy of non-intervention; and in fact some of the most important discussions have taken place in this Sub-Committee.

The Committee's history cannot be understood without reference to political factors and the progress of the Civil War itself. Its proceedings have been dominated by Germany's and Italy's unfeigned support for General Franco, by Russia's equally open preference for the Spanish Government, by France's sympathy with the latter, and by the United Kingdom's unswerving but uneasy neutrality. Definite results have been farthest off when a definite decision in the war has been in sight, and nearest when the military situation has suggested a stalemate.

The first substantive question with which the Committee had to deal was to ascertain what legislative measures had been taken to give effect to the ban on the export of arms and munitions to Spain, and on the recruitment, enlistment, and transport of volunteers for service there. This led to the even thornier problem of obtaining, amidst flagrant breaches of the Non-Intervention Agreement and the atmosphere of suspicion which they engendered, agreement to the principle of a system of supervision; and when this was reached, early in 1937, it was some time before agreement was attained on the scheme itself. The abandonment of the Soviet claim to participate in a naval patrol led to the adoption of a scheme whose essential features were: (1) a corps of British observers to watch the Portuguese frontier; (2) a corps of international observers on the Pyrenees frontier; (3) control of coasts by (a) naval patrols supplied by the fleets of Great Britain, France, Germany, and Italy, (b) observers to be carried by the





"EUROPE'S PUBLIC WORKS PROJECT NO. 1," seen by Messner in *The Rochester Times-Union* as a ticklish job that worried Britain and France

ships of the participating countries when bound for Spanish ports; (4) a Non-Intervention Board to administer the scheme.

This scheme came into force in April, but, following the bombing of one German cruiser employed in the patrol and an alleged torpedo attack on another, Germany and Italy withdrew from the naval patrol, and the frontier controls were suspended. After prolonged negotiations, a compromise basis for the renewal and control proposed by Great Britain has been accepted. This involves (1) the stationing of international officers in Spanish ports; (2) the sending of a Commission to Spain to arrange and supervise the withdrawal of non-Spanish nationals; (3) the grant of belligerent rights at sea to the combatant parties when the Commission reports that satisfactory progress has been made with this withdrawal. At the moment of writing (Jan. 1, 1938) technical sub-committees are at work on the administrative details necessary to carry the new scheme into effect.

(See also INTERNATIONAL LAW: *Civil War*; ITALY: *History*; MEDITERRANEAN, THE; SPAIN, CIVIL WAR IN.)

(W. T. WE.)

**Norris, William Foxley** (1859-1937), K.C.V.O., D.D., British clergyman; born Feb. 4. He was educated at Charterhouse and Trinity college, Oxford, was ordained in 1882, and was successively vicar of Shirburn, Oxon. (1886), and of Almondbury, Yorks. (1888), rector of Barnsley (1901), and archdeacon of Halifax (1906). From 1917 to 1925 he was dean of York, and in 1925 was appointed dean of Westminster. Upon his shoulders fell a very large proportion of the burden of preparation for the coronation ceremonial in 1937.

The dean was a fellow of the Society of Antiquaries, and was created a C.V.O. in 1929, and a K.C.V.O. in 1934. His successor as dean of Westminster, appointed on Nov. 17, is the Rt. Rev. P. F. D. de Labilliere, suffragan-bishop of Knaresborough. He died Sept. 28, 1937.

**North Carolina**, popularly known as the "Old North State" or the "Tar Heel State"; area, 52,286 sq.mi.; population according to the U.S. census of 1930, 3,170,276, estimated July 1, 1937, 3,492,000. Capital, Raleigh, 37,379; Charlotte, the largest city, 82,675. Of the State's population in 1930, 809,847 (25.5%) were urban; 918,647 (29%) Negroes; 2,251,629 whites; 8,788 foreign born.

**History.**—On Jan. 7, 1937, Clyde R. Hoey, Democrat, was inaugurated as governor. The biennial legislature, meeting in January-March, rejected the proposed Federal amendment empowering Congress to prohibit child labour, but raised the prohibitory age for employment of children in industry to 16 years, with certain exceptions, and to 18 years for certain hazardous occupations. The first general labour law relating to maximum hours was enacted—48 hours a week for women and 55 for men, with many exceptions.

Under Federal stimulus, the State legislature established the North Carolina Unemployment Compensation Commission to administer a fund, raised from taxes of 2.7% on the payrolls of employers, from which unemployed workers may draw benefits of not more than \$15 a week for not exceeding 16 weeks a year. Also, the State Board of Charities and Public Welfare was charged with the administration of monthly benefits to the aged needy, the needy blind, and dependent children from funds supplied jointly by the county, State and Federal Governments. The legislature ended the reign of State prohibition since 1908 by establishing a county option-State control system under which 89 legal liquor stores in 27 of the 100 counties were opened during the year.

Constitutional amendments were ratified by popular vote in November, 1936, raising the limit of the income tax rate to 10%, limiting the annual or biennial increase of State and local debts (except by popular vote) to two-thirds of the amount by which the outstanding debts were reduced, and empowering the legislature to provide for two additional Supreme Court justices, to exempt from taxation homes to the value of \$1,000, and to classify real and personal property for taxation. The legislature classified intangible personal property at lower rates and raised the income tax rate to 7% on net income above \$10,000. Important State officers were: Clyde R. Hoey, governor; Wilkins P. Horton, lieutenant-governor; Thad Eure, secretary of state;

George Ross Pou, auditor; C. M. Johnson, treasurer; Clyde A. Erwin, superintendent of public instruction; A. A. F. Seawell, attorney-general.

During the summer there was held on Roanoke island a celebration of the 350th anniversary of the planting by Sir Walter Raleigh in 1585-87 of the first two English colonies in America. The celebration was featured by the periodic presentation of Paul Green's drama *The Lost Colony* and the visit and address by President Roosevelt on August 18, the anniversary of the birth of Virginia Dare in 1587.



CLYDE R. HOEY, governor of North Carolina, and Mrs. Hoey



**Education.**—North Carolina maintains separate public schools for whites, Negroes and Indians, with compulsory attendance from 6 to 13 years of age inclusive. In 1935-36, there were 4,347 public elementary and 936 high schools, with 24,235 teachers and 103,766 enrolment, operated at a cost of \$23,400,000 of which the State Government contributed \$20,223,211. The State appropriation for 1937-38 is \$23,796,367. The State maintained three branches of the consolidated University of North Carolina at Chapel Hill, Raleigh and Greensboro with an enrolment of 4,674 in 1936-37 as well as 12 standard and teachers' colleges for whites, Negroes and Indians. There were 41 private colleges for whites and Negroes.

**Banking and Finance.**—In 1936-37, State expenditures were \$90,147,013; receipts, \$98,901,797. The assessed value of real and personal property was \$2,199,517,988 in 1936. On June 30, 1937, the State bonded debt was \$161,934,000; 43 national banks had deposits of \$95,146,000, and 166 State commercial banks and trust companies, \$268,483,000. In 1937 there were 4,763 mi. of railroads; and the State Highway and Public Works Commission maintained 11,160 mi. of State highways and 47,428 mi. of county highways, of which 9,715 mi. were hard surfaced.

**Agriculture, Manufacture and Mining.**—In 1935, 2,632 manufacturing establishments employed 229,534 wage earners at wages of \$152,037,469 and made products valued at \$1,111,977,771. The leading industries were tobacco, cotton goods, knit goods and furniture. The mineral production was valued at \$7,502,567, chiefly granite, sand and gravel, feldspar, and ceramics. In 1936 the kilowatt-hour production of electricity in the State was 2,861,806,000. The value of the lands and buildings on the 300,967 farms in North Carolina in 1935, approximately half of which were operated by tenants, was \$622,134,983. The total cash agricultural income in 1937 from crops, livestock and livestock products, and Government payments was \$271,132,000—an increase of 21% over that of 1936, accounted for chiefly by tobacco, which was valued at \$154,800,000.

(A. R. N.)

**North Dakota,** North-central State of the United States and popularly known as the "Flickertail State." It has an area of 70,837 sq.mi. and a population of 706,000 (estimated July 1, 1937). The capital is Bismarck, population 11,090 (1930). Cities with larger population are: Fargo, 28,619; Grand Forks, 17,112; and Minot, 16,099. Of the population of the State 580,645 in 1930, 113,306 were urban, or 13.6%; 680,477 were white; 368 coloured; 576,058 native born; and 105,155 foreign born.

**History.**—Principal Officers of the State: Governor, Wm. A. Langer; Lieutenant-Governor, T. H. H. Thoreson; Secretary of State, Jas. D. Gronna; State Auditor, Berta E. Baker; State Treasurer, John Gray; and Attorney-General, Alvin C. Strutz.

**Education.**—At the last session of the legislature in 1937 it was provided by law that compulsory military training should be discontinued at the State university and at the Agricultural College. The biennial appropriations, 1937-39, for the institutions of higher learning were as follows: State university and school of mines, \$936,725; Agricultural college, experiment station and extension division, \$1,864,226; and three State teachers colleges, two Normal schools, the School of forestry and the School of science, \$1,506,421. The total enrolment in these institutions was approximately 7,000. The enrolment in high schools for the year ending July 1, 1937, was 33,428. For the same date the enrolment in all schools below the grade of high school was 11,574. The total expenditure for the support of all these schools for the year ending July 1, 1937, was \$10,674,249.

**Banks.**—On June 30, 1937, 138 State banks and two trust

companies operating within the State reported invested capital, including \$1,334,800 debentures held by the Reconstruction Finance Corporation, to the amount of \$5,267,392, and total resources of \$27,348,000. On June 30, 1936, 64 National banks operating within the State reported a total invested capital of \$6,770,000, which amount included preferred stock held by the Reconstruction Finance Corporation, and total resources of \$57,517,000.

The emergency relief appropriation for 1937 amounted to \$33,086,697. The principal Federal expenditures were for the WPA, for farm security administration and for public roads.



WILLIAM A. LANGER, governor of North Dakota

ranked second with 1,775,620 bushels.

In 1935 the total value of all manufactures was \$42,913,328, over one-half butter and flour. In 1935 the amount of lignite coal mined was 1,955,510 tons, valued at \$2,395,000. There was no other mineral product of any importance. (O. G. L.)

**Northern Ireland:** see IRELAND, NORTHERN.

**Northern Rhodesia:** see RHODESIA, NORTHERN.

**Northern Territory,** governed by the Australian commonwealth through an administrator; comprises Central Australia (capital, Alice Springs) and North Australia (capital, Darwin). It elects one non-voting member to the commonwealth House of Representatives.

**Area, Population, and Cities.**—Area: 523,620 sq.mi. European and Asiatic population (1937), 5,454. Aboriginal population (1935), 18,244. There are 15 aboriginal reserves, area, 67,244 square miles. Population of Darwin (1933 census), 1,566.

**History.**—Controversy was aroused by the appointment of Mr. C. L. A. Abbott, a member of the House of Representatives, as administrator. In April, the Government appointed a committee of inquiry into the Territory's resources and possibilities, consisting of Mr. W. L. Payne, chairman of the Queensland Land Administration board, and Mr. J. W. Fletcher, a Queensland pastoralist. Reporting in December, they declared that the Territory could have been better governed if it had been divided between adjoining States. Recommendations included the abolition for 20 years of the Territory's income tax, petrol tax, and all tariffs; the proclamation of Darwin as a free port; the construction of two railways into the Territory from Dajarra (Queensland) and Wyndham (Western Australia); exchange of cattle for sheep grazing, and the decentralization of the administration.

**Trade, Finance, and Communications.**—Production in 1936-37 was estimated at £499,000. Net payment from commonwealth budget was £611,000. Darwin gained income from its position as an airport, and a strategic base there was planned, to cost £400,000. (H. V. H.)



**Northwestern University** was founded in 1851, at a time when Chicago had a population of 28,000. The charter of the university provides that a majority of the board of trustees shall be members of the Methodist Episcopal Church, but no particular religious faith is required of those who attend.

The university has two campuses, one in the Chicago suburb, Evanston, where the undergraduate schools are located. Another campus, situated on Chicago's near north side, six blocks from the loop, is devoted to the professional schools.

For the year 1937-38 the enrolment of the university is as follows: 5,796 full-time students, of which approximately 1,300 are registered in the professional schools on the Chicago campus; 9,956 part-time and evening department students, most of whom are on the Chicago campus. The registration for the 1937 summer session was 4,694 students.

The faculty numbers 1,251, of whom 588 are full-time members. The total budget for the year 1937-38 is \$4,900,000, and the value of all land and buildings used for educational purposes is \$16,678,000.

During the year new buildings were constructed, or are in process of construction, as follows: five men's dormitories costing \$200,000, and a freshman women's dormitory costing \$600,000 for the Evanston campus; a \$2,000,000 building on the Chicago campus for the Wesley Memorial hospital, which is affiliated with the university.

Among new courses established by the university this year are (1) field courses in education, (2) an educational clinic, and (3) an experimental teaching program in several high schools of the Chicago area.

During the academic year ending July 30, 1937, the gifts to the university totalled \$5,153,000.

**North-West Territories** embrace all of the mainland, in Canada east of Yukon territory and north of the Provinces of Manitoba, Saskatchewan, Alberta and British Columbia; all of the islands in Hudson and James bays and in Hudson strait including Ungava bay; and all of the Arctic islands north of the mainland of Canada within the area bounded on the east by a line passing midway between Greenland and Baffin, Devon and Ellesmere islands, to the 60th meridian of longitude, following this longitude to the North Pole, and on the west by the 141st meridian of longitude, following this longitude to the Pole. In 1918, the territories were subdivided, for administrative purposes, into the provisional districts of Mackenzie, Keewatin, and Franklin. The land and water area is estimated at 1,309,682 square miles. The 1931 census shows a population of 9,723, composed of 4,670 Eskimos, 4,046 Indians and 1,007 whites.

The welfare of the native population is one of the chief responsibilities of the administration. Consequently the conservation of the wild life of the region, upon which the natives depend for subsistence, is of prime importance. An aggregate area of 514,557 sq.mi. has been set aside for game preserves and sanctuaries. Three thousand domesticated reindeer were purchased in Alaska in 1929 and herded overland. The herd now numbers over 4,000 head. Each year animals, surplus to the needs of the herd, are slaughtered and the meat made available for mission hospitals and residential schools, relief, sale, and for use at the reindeer stations.

The fur trade has been for many years the most important industry in the territories and the production of furs is still the principal occupation of a large proportion of the population. For

the licence year ending June 30, 1936, the number of pelts taken was 211,551 with an estimated value of \$1,188,285.

In 1930 world attention was directed to the Canadian North by the discovery of pitchblende and silver deposits on Great Bear lake. During 1937 activity centred around the pitchblende-silver deposits on Great Bear lake and the gold discoveries on Outpost island, Yellowknife river, and Gordon lake, in the Great Slave lake area. In the Yellowknife and Gordon lake areas, one 100-ton mill has been installed and another will be erected in the spring of 1938. In Dec. 1937, a rich find of gold-bearing quartz was reported from Snare river, 40mi. north of Rae on Great Slave lake. There were at the end of 1937 nearly 4,000 claims in good standing in the North-West Territories. (H. A. G.)

**Norway**, kingdom of North-west Europe, member of the League of Nations. Bounded N. by the Arctic ocean, E. by Finland and Sweden, S. and W. by the North sea and Arctic ocean. Capital, Oslo. Ruler, King Haakon VII (born 1872; elected 1905). National flag, a blue St. George's cross, white-bordered, on a red ground.

**Area, Population and Cities.**—Area: 124,588 sq.mi.; population (1930 census): 2,814,194; (1935 estimate) 2,884,300;

County ( <i>Fylke</i> )	Area (sq.mi.)	Population (1930)
Aust-agder . . . . .	3,607	73,816
Vest-agder . . . . .	2,794	81,233
Akershus . . . . .	2,064	236,939
Bergen (town) . . . . .	14	98,303
Buskerud . . . . .	5,738	143,073
Finnmark . . . . .	18,573	53,308
Hedmark . . . . .	10,621	157,942
Hordaland . . . . .	6,043	164,376
Møre . . . . .	5,812	165,064
Nordland . . . . .	14,728	186,920
Opland . . . . .	9,608	137,710
Oslo (town) . . . . .	6	253,124
Östfold . . . . .	1,613	167,030
Rogaland . . . . .	3,546	173,258
Sogn og Fjordane . . . . .	7,135	91,808
Telemark . . . . .	5,837	127,754
Troms . . . . .	10,045	97,467
Nord-trøndelag . . . . .	8,659	96,016
Sør-trøndelag . . . . .	7,241	174,946
Vestfold . . . . .	903	134,107

Primary education is compulsory. Education figures (1933-34): 5,779 elementary schools with 392,482 pupils; 136 secondary, with 26,607; Oslo university, with 3,905. The Evangelical Lutheran Church is State-endowed, its ministers being nominated by the king; other religious bodies are tolerated (except Jesuits) their adherents totalling (1930) only 91,459 (chiefly Methodists and Baptists).

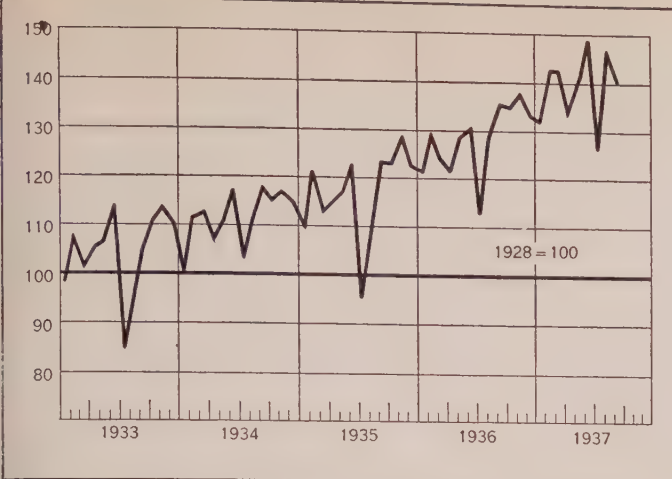
Leading towns (1930 populations): Oslo, 253,124; Bergen 98,303; Trondheim, 54,458; Stavanger, 46,780; 5 others above 15,000.

**History.**—The king represents the executive, the *Storting* (constitution for 1937-39: Labour, 70; Conservative, 36; Liberal, 23; Agricultural, 18; other parties, 3=150) the people's sovereignty; election is direct, universal, and proportional. The cabinet consists of a prime minister (1935, Johan Nygaardsvold) and 8 others.

A prosperous year resulted in a reduction of the national debt. The crown princess gave birth (February) to a son (Harald—third child).

Lars Christensen discovered (February), from the air, new Arctic territory, dropping the Norwegian flag at 38° E. long., 69° 30' S. latitude. In March, questions of neutrality and defence were discussed, and the period of annual training in the service:





NORWAY: Industrial production index, without adjustment for seasonal variation (*The Annalist*)

was extended. Oslo having been the scene of origin (1930) of the Convention bearing its name, Norway took an active interest in its projected revival. Representatives of 7 States—Norway, Sweden, Denmark, Finland, Holland, Belgium and Luxemburg—met at The Hague (March), completed their deliberations in Brussels, and signed at The Hague (May) a pact in favour of continued preferential trade relations among themselves, provisionally for a year from July 1, some of them afterwards extending the concessions to non-signatories (*see* BELGIUM; NETHERLANDS).

**Trade, Communications, and Finance.**—Less than four per cent of the land is cultivatable. Yet agriculture and forestry support nearly one-third of the population, industries closely following, aided by abundance of water-power. The wealth of pyrites and iron-ore leaves some to be exported, together with paper and pulp, electro-chemical and electro-metallurgical products. Imports: 922,947,000 kroner (£46,147,000); exports: 674,491,000 kroner (£33,725,000); both figures showed increases (1936); Great Britain takes nearly one-quarter.

Mercantile marine (1937): 4,015 ships (4,201,120 tons). Mileage of railways (mainly State): 2,464 (1935); of roads: 24,980 (1936). Telegraphs and telephones are well developed; there are 78 wireless stations. A subsidized air-service flew (1936) 210,581 miles (4,537 passengers; 148 metric tons of goods).

The unit of currency is the krone (at par 18.16 kroner=£1). The "Norges Bank" (joint-stock, but largely State-owned) had in circulation (1937) notes representing 400,702,000 kroner. In savings banks (1935) 2,249,288 depositors had 1,989,459,000 kroner.

Budget (1936-37): revenue, 549,000,000 kroner; expenditure, 491,700,000 kroner.

**Defence Forces.**—The army is a National Militia, with compulsory training (extended from March to 84 days); strength (1936), 12,300 men. The navy has 4 small cruisers, other small craft, and 36 seaplanes.

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**Norwegian Literature:** *see* SCANDINAVIAN LITERATURE.

## Notre Dame, University of.

Intensification of scientific research received major attention at the University of Notre Dame during 1937. A new biology building costing \$400,000 was opened; unique among its laboratory features is a complete series of cages for the raising of germ-free animals and plants. The laboratories of physics were

extended to provide complete general equipment for graduate work, and full graduate courses in physics and mathematics are now offered. A general symposium in science was held in January, to honour the memory of the late Julius A. Nieuwland, C.S.C., professor at the University of Notre Dame and discoverer of the basic elements of synthetic rubber. A symposium in the calculus of variations, held in April, drew mathematicians from all parts of the United States. European scientists added to the faculty during the year include Arthur E. Haas and Eugene Guth, in physics; and Karl Menger and Emil Artin, in mathematics.

In the field of democracy and citizenship, the university co-operated with the Alumni Association in an anti-communism campaign. Features of this were the national speaking tour of the alumni President, Arthur J. Hughes, of Chicago, and a similar tour by Arnold Lunn, of England, visiting professor at the university; a series of local addresses by the Rt. Rev. Msgr. Fulton J. Sheen, Rev. James M. Gillis, C.S.P., and Hon. J. Edgar Hoover, and a lecture course by Waldemar Gurian, late of Russia and Germany.

During the year the university opened the renovated Corby hall as a faculty residence, erected Zahm hall (a Freshman dormitory), and began the construction of the Rockne Memorial Field House. The Laetare Medal for 1937 was conferred on Professor Jeremiah D. M. Ford, of Harvard university. The enrolment figures for 1937-38 were 3,080 with 845 part time students and a faculty of 211.

(J. F. O'H.)

**Nova Scotia,** one of the original provinces of the Dominion of Canada; area 21,428 sq.mi.; population, according to the Canadian census of 1931, 512,846, estimated Jan. 1, 1938, 537,000. Capital, Halifax, 59,275. The only other city in the Province is Sydney, 23,089, which is the centre of the coal, iron and steel industries. Of the Province's population, 281,192 are rural or 55%; 507,235 are Canadian born or 97%.

The upper house of the Provincial Legislature was recently abolished by order in council. It was held that its members held office at the will of the Government and that it was within the power of the Government to dismiss them at pleasure. In 1936 an act of the Provincial Legislature was passed establishing a Department of Labour. This act gives the Department full control over all matters relating to labour and provides for the appointment of a Minister and Deputy Minister of Labour. The latter is empowered to collect and publish information and statistics affecting labour and to administer such acts as may be assigned to the Department by the Government. At present (1938) labour bureaus in the Province, the administration of the Factories Act, Minimum Wage Board, Limitation of Hours Board, Industrial Standards and unemployment relief are under the control of the Department of Labour.

In 1937 an act was passed authorizing wage-earners to establish unions of such kind as they desired or to join such existing unions as they chose and forbidding any interference on the part of employers—an act which has much in common with the Wagner Act in the United States. This and similar acts were sponsored and passed by the Liberal Government which was again returned to office by a majority of 25 to 5 in an election held on June 29, 1937, under the leadership of the Hon. A. L. Macdonald, who is Premier, Provincial Secretary and Treasurer of the Province. The lieutenant-governor, who is appointed by the Dominion Government, is the Hon. Walter H. Covert. Nova Scotia is represented in the Dominion House of Commons by 12 members, all of whom belong to the Liberal Party, and in the Dominion Senate by 10 members who are appointed for life.

The total gross annual agricultural revenue in 1935 was \$27,042,000. The value of manufactured products for the same year



was \$161,207,522 (£32,241,000) while for 1936 the value of mineral products was \$26,569,294 (£5,314,000).

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**Noxious Weeds.** Development of chemical herbicides to eradicate bindweed, Canada thistle, quack grass, downy brome grass and other weed pests reveals interesting and practical results, as reported in 1937 in the *Journal of the American Society of Agronomy*, in the *Journal of the Department of Agriculture of South Australia*, and in other scientific publications. Extensive tests of acid-arsenic poisoning of weeds at the California Agricultural Experiment Station, Davis, Calif., are reported to the Society of Agronomy by A. S. Crafts, and show various factors that determine the effectiveness of poisoning plats of bindweed. Plats 40 rods square were sprayed with one and one-half, two, three, and four gallons each of a stock arsenic solution, with commercial, concentrated sulphuric acid. Percentage of resprouting in four plats, each sprayed with four gallons of solution, was 0.5, 1.7, 3.2, and 6.5%. Heavier spraying up to six gallons produced no added results, and it is concluded that a spray of four and one-half gallons under favourable conditions will produce practical results. The solution, the report recites, may be made for as little as one cent a gallon, making the cost for materials to spray an acre about \$5 to \$7.50. It is pointed out, however, that the water balance within the sprayed weeds must be such that the weeds will absorb the spray, first in the leaves, then on into the stems and finally into the roots. While acid-arsenical weed poisoning has proved practical in semi-arid regions it is necessary that the limiting factors be realized in humid regions. It was found most practical to spray at night to avoid evaporation of the spray before the plant could absorb it, and also not to spray when humidity was low or there was a strong wind. Best results were obtained in spraying Russian knapweed (*centurea repens*): intermediate results in spraying alkali mallow (*sida hederacea*) and bindweed, and total failure in spraying perennial grasses and hoary cress.

Experiments at the Waite Research Institute in South Australia recommend spraying bindweed with sodium chlorate or mixing the chlorate with sand and applying about one and one-half ounces to the square yard. The expense of eradicating bindweed with chlorates, however, was said to be £12 to £15 per acre and a caution as to the highly inflammable nature of sodium chlorate is added.

(S. O. R.)

**Nursery Schools.** In the last decade two marked developments in American nursery schools have occurred: first, a steady increase in publicly and privately supported schools under relatively permanent auspices and, second, the establishment, as an emergency measure, of many schools under Federal support.

The 1927 U.S. Office of Education survey lists 76 nursery schools of the permanent type, while the 1936 report lists 285. The typical age range is two to five years. Half are in full-day session, and the remainder in half-day session. Fifty per cent are supported by tuition, 27% by universities, 19% by philanthropic organizations and 4% by public schools. While service for children is the primary purpose, schools also function as: research centres; demonstration centres for training teachers, home economics workers and nurses; centres for parent education and, recently, in public high schools as centres for pre-parental education. Nursery school teachers have excellent professional training; 31% have bachelor's degrees and 41% master's or doctor's degrees. With its emphasis upon growth and development and upon children's needs and activities, the nursery school is exer-

cising a marked effect upon the education of older children.

The emergency nursery school program of the Works Progress Administration is outstanding. In October 1937, 1,481 emergency schools in 48 States, the District of Columbia, and Hawaii, enrolled 40,243 children. Features of this program are: extensive in-service training of teachers who through direct contact with young children have gained insight into modern training methods; the close integration of health and nutrition services with educational services; several experiments in adapting nursery school techniques to young children of varied racial origins and to children with physical handicaps, and a very effective program of parent education.

In its close integration with modern research, the nursery school movement differs from earlier educational movements. As a result both its standards and its practical achievements are at a very high level.

(J. E. A.)

**Great Britain.**—During 1937, considerable progress was made in the establishment of nursery schools. In England and Wales, as against 85 schools recognized by the Board of Education in 1936, accommodating 6,335 children, there are now 96, with accommodation for 7,066. Of these, 37 are maintained by local education authorities and 59 by the State and voluntary organizations jointly. Proposals for another 40 new nursery schools are under consideration. In Scotland, there are now 22 nursery schools, of which 17 are voluntary and 5 under local education authorities. Belfast has 2 voluntary nursery schools.

**Soviet Russia.**—In the U.S.S.R., in 1937, 2,500,000 children under eight were in properly equipped full-time nursery schools with qualified staff, including doctor and nurse, and visiting or full-time psychologist. Another 3,500,000 are cared for in a more primitive kind of nursery school, as a temporary measure, which contains children of mixed ages in one or two groups, under the care of untrained or short-term (eight weeks to six months) teachers. Decrees have been issued requiring the various bodies who organize nursery schools to increase their number.

(S. E. D.; G. Ow.)

**Nutmegs:** see SPICES.

**Nuts.** Yield of the four principal nut trees, filbert, almond, English (Persian) walnut, and cultivated pecan, was 226,000,000lbs., 41% more than the average annual production in the United States. The huge increase is owing mainly to the larger increase in walnut orchards and also to filberts which are just entering the beginning stage of rapid increase. The United States Department of Agriculture believes that unless there is an unforeseen abandonment of orchards or pulling of trees, combined nut crops of 200,000,000lbs. will become typical. A further indication of the increase in nut farming in the United States is shown by the import figures. In 1929 English walnut importations were 23,537,000lbs.; in 1936 they were 4,535,000 pounds. Filbert importations were 21,495,000 in 1929 and 10,038,000 in 1936; almonds, 19,997,000lbs. in 1929 and 12,668,000lbs. in 1936. Large pecans formerly sold at 10 to 50 times the price of forest pecans; now at two to five times, largely because the shelled pecan market prefers smaller nuts. Efforts are being made by the Department of Agriculture to develop a blight-resisting chestnut and restore the chestnut groves.

The seven walnut-growing countries of Europe produced in 1937 a crop estimated at 2,147,000 bags of 110lbs. each, which is 21% larger than the 1936 production of 1,770,000 bags, and 37% larger than the 1929-33 average of 1,571,000 bags. In recent years only the 1931 crop of slightly more than 200,000,000lbs. has approached the 1937 yield. Production by countries in 1937 and 1936 was: France, 810,000 in 1937 and 740,000 bags



1936. Italy, 400,000 and 255,000 bags. Rumania, 300,000 and 20,000 bags. Yugoslavia, 175,000 and 240,000 bags. Turkey, 50,000 and 200,000 bags. Bulgaria, 90,000 and 117,000 bags. Hungary, 60,000 bags in each of both crop years.

The three principal filbert-producing countries, which are Italy, Spain and Turkey, had an estimated 1937 crop of 135,000 short tons of filberts compared with a 1936 production of 131,000 tons and a six-year (1929-34) average of 91,800 tons.

Exports of walnuts from North China have greatly diminished, chiefly because of the large crops in the United States and Europe, although difficulties and extra charges for trans-shipment at Chinese ports have also had a retarding effect. The 1937 exports are estimated at about 200,000 cases of 55lbs. each.

(S. O. R.)

## Nyasaland Protectorate, The.

This British protectorate in East Africa is nowhere more than 100 mi. in width. The governor is Sir H. B. Kittermaster, K.C.M.G., K.B.E. Zomba is the capital, and Blantyre the commercial centre.

Area c. 37,000 sq.mi.; pop. 1,622,926, of whom 1,838 are Europeans and 1,558 Asiatics. Excepting a Government Jeanes training centre, all education is managed by missions. There are no secondary schools, but four elementary schools for Europeans.

Exports of fibre, soya beans, tea, and tobacco increased in 1936, beans figuring for the first time as an appreciable export. Coffee exports fell from 366cwt. in 1934 to 168cwt. in 1936. Total exports in 1936 were valued at £817,669, and imports at £794,089. Communication with Beira in Portuguese East Africa is effected by Nyasaland railways and the Central African railway, 89 mi. of which lie in the territory and 24 in Portuguese territory, and by the Trans-Zambesi railway which is wholly in Portuguese territory.

English silver and copper coins are legal tender. Income tax yields £131,608. Revenue for 1936 was £798,426 and expenditure £754,217. It was decided during the year that the tobacco crop of about 15,000,000lbs. annually should in future be sold compulsorily by auction instead of by private treaty.

There is a Nyasaland Volunteer Reserve.

**London Conference:** see MEDITERRANEAN, THE; NON-INTERVENTION COMMITTEE.

Excluding Russia, for which no data are available, the world production of oats in 1937 was estimated by the International Institute of Agriculture as 2,957,783,000bu. compared to 2,572,776,000bu. in 1936. There was little change in Europe, 1,475,399,000bu. in 1937 and 1,465,207,000 in 1936. The estimates for Canada were 299,694,000bu. in 1937 and in 1936 288,764,000 bushels. Production in the United States in 1937 was estimated by the Department of Agriculture as 46 per cent larger than the previous year, or 1,146,258,000bu. from 35,079,000ac. harvested in 1937, as against 785,506,000bu. from 33,000,000ac. in 1936. The 1937 crop, however, was 6 per cent smaller than the five-year (1928-32) average of 1,215,102,000bu. from an average annual acreage of 40,015,000,000. The average yield per acre in the United States in 1937 was 32.7bu., compared with 23.5bu. in 1936 and 30.2bu. for the ten-year average (1923-32). Yields were generally above average, except in the north-east, the Northern Great Plains and Oklahoma and Texas. The estimates by the International Institute of Agriculture for wheat production for Germany at 404,304,000bu. in 1937 and 370,074,000bu. in 1936; for France, 313,989,000 in 1937 and 300,354,000bu. in 1936. Poland's crop was 161,901,000 in 1937 and 181,887,000bu. in 1936; that of England and Wales, 63,280,-

000 in 1937 and 75,600,000bu. in 1936; Scotland, in 1937, 47,600,000bu. as against 44,940,000 in 1936. The crop in Czechoslovakia in 1937 was 88,824,000bu.; in 1935 it was 83,938,000bu.; in Sweden, 86,476,000 and 85,291,000bu.; in Argentina, 54,564,000 and 59,566,000 bushels. (See also CEREALS.) (S. O. R.)

**Obituaries.** Biographies of the following men and women who died during 1937 will be found in their regular alphabetical order in this Year Book.

Name	Birth Date	Death Date
ABDULHALIK HAMID, Turkish poet . . . .	1852	Apr. 13, 1937
ADLER, ALFRED, Austrian psychologist . .	Feb. 7, 1870	May 28, 1937
ALDRICH, RICHARD, American music critic	July 31, 1863	June 2, 1937
AMES, WINTHROP, American theatrical producer	Nov. 25, 1871	Nov. 3, 1937
ARMSTRONG, HENRY EDWARD, British chemist	May 6, 1848	July 13, 1937
ASHTON, ALGERNON BENNET LANGTON, British composer	Dec. 9, 1859	April 10, 1937
BAKER, GEORGE FISHER, American financier	Mar. 19, 1878	May 30, 1937
BAKER, NEWTON DIEHL, U.S. secretary of war during the World War . . . .	Dec. 3, 1871	Dec. 25, 1937
BAQIR SIDQI PASHA, Iraq statesman . . .	1890	Aug. 12, 1937
BARBOUR, CLARENCE AUGUSTUS, American clergyman	Apr. 21, 1867	Jan. 16, 1937
BARRIE, SIR JAMES MATTHEW, Scottish playwright	May 9, 1860	June 19, 1937
BAYLIS, LILLIAN MARY, British producer of low-priced Shakespeare . . . .	May 9, 1874	Nov. 25, 1937
BINGHAM, ROBERT WORTH, U.S. ambassador to Great Britain . . . .	Nov. 8, 1871	Dec. 18, 1937
BISLETT, GAETANO, Catholic cardinal . . .	Mar. 20, 1856	Aug. 30, 1937
BLAKE, JOSEPH AUGUSTUS, American surgeon	Aug. 31, 1864	Aug. 12, 1937
BORDEN, SIR ROBERT LAIRD, Canadian statesman	June 26, 1854	June 10, 1937
BOSE, SIR JAGADIS CHANDRA, Indian physicist	Nov. 30, 1858	Nov. 23, 1937
BOTHMER, FELIX VON, Count, German Army officer	Dec. 10, 1852	Mar. 19, 1937
BURLESON, ALBERT SIDNEY, postmaster general under President Wilson . . .	June 7, 1863	Nov. 24, 1937
BUTLER, ELLIS PARKER, American humourist	Dec. 5, 1869	Sept. 13, 1937
CARTER, MRS. LESLIE, American actress .	June 10, 1862	Nov. 13, 1937
CHAMBERLAIN, SIR (JOSEPH) AUSTEN, British statesman . . . .	Oct. 16, 1863	Mar. 16, 1937
COBURN, IVAH WILLS, American actress .	Sept. 6, 1873	April 27, 1937
COFFIN, HOWARD EARLE, American industrialist . . . .	Apr. 12, 1856	Nov. 21, 1937
CONWAY, WILLIAM MARTIN CONWAY, 1st Baron, British art critic . . . .	Jan. 1, 1863	Apr. 19, 1937
COUBERTIN, PIERRE DE FREDI DE, Baron, French author and originator of the modern Olympic games . . . .	Jan. 1, 1863	Sept. 2, 1937
COX, SIR PERCY ZACHARIAH, British administrator . . . .	Nov. 20, 1864	Feb. 20, 1937
CRANE, (ROBERT) BRUCE, American landscape artist . . . .	Oct. 17, 1857	Oct. 30, 1937
CROISSET, FRANCIS DE, French playwright and author . . . .	Jan. 28, 1885	Nov. 8, 1937
CROZIER, FRANK PERCY, British general and pacifist . . . .	Jan. 9, 1870	Aug. 31, 1937
DALEN, GUSTAF, Swedish inventor . . . .	Nov. 30, 1869	Dec. 9, 1937
DALZIEL, JOHN SANDERSON, American wood engraver . . . .	Dec. 24, 1839	Aug. 18, 1937
DAMROSCH, FRANK HEINO, American musician and founder of the Institute of Musical Art . . . .	June 22, 1859	Oct. 22, 1937
DAVIDSOHN, ROBERT, German historian . .	Apr. 26, 1853	Sept. 18, 1937
DERNBURG, BERNHARD, German official and war propagandist . . . .	July 17, 1865	Oct. 15, 1937
DOUMERGUE, GASTON, French statesman .	Aug. 1, 1863	June 18, 1937
DRINKWATER, JOHN, British poet and playwright . . . .	June 1, 1882	Mar. 25, 1937
EAMES, WILBERFORCE, American bibliographer . . . .	Oct. 12, 1855	Dec. 6, 1937
EARHART, AMELIA, American aviatrix . .	July 24, 1898	July 2, 1937
EDWARDS, ALFRED GEORGE, Welsh churchman and archbishop . . . .	Nov. 2, 1848	July 22, 1937
ERNLE, ROWLAND EDMUND PROTHERO, 1st Baron, British agriculturist . . . .	Sept. 6, 1852	July 1, 1937
FILENE, EDWARD ALBERT, Boston merchant . . . .	Sept. 3, 1860	Sept. 26, 1937
FOOTE, ARTHUR WILLIAM, American organist and composer . . . .	Mar. 5, 1853	Apr. 9, 1937
FORBES-ROBERTSON, SIR JOHNSTON, British classical actor . . . .	Jan. 16, 1853	Nov. 6, 1937
FRANKLIN, EDWARD CURTIS, American chemist . . . .	Mar. 1, 1862	Feb. 13, 1937
GALLWITZ, MAX VON, German officer . . .	May 2, 1852	Apr. 19, 1937



Name	Birth Date	Death Date
GARDNER, PERCY, British archaeologist	Nov. 24, 1846	July 18, 1937
GARVAN, FRANCIS PATRICK, former U. S. custodian of alien property	June 13, 1875	Nov. 7, 1937
GAY, WALTER, American painter	Jan. 22, 1856	July 15, 1937
GEDDES, SIR ERIC CAMPBELL, British industrialist	Sept. 26, 1875	June 22, 1937
GERSHWIN, GEORGE, American composer	Sept. 26, 1898	July 11, 1937
GILLETTE, WILLIAM HOOKER, American actor and playwright	July 2, 1855	Apr. 29, 1937
GLEAVES, ALBERT, U.S. Admiral	Jan. 1, 1858	Jan. 6, 1937
GLEICHEN, LORD EDWARD, British major-general	Jan. 15, 1863	Dec. 15, 1937
GORDON, CHARLES WILLIAM, Canadian author and churchman	Sept. 13, 1860	Oct. 31, 1937
GREENOUGH, ROBERT BATTEY, American surgeon	Nov. 9, 1871	Feb. 16, 1937
GUEST, FREDERICK EDWARD, British soldier and politician	June 14, 1875	Apr. 28, 1937
HADLEY, HENRY KIMBALL, American composer and conductor	Dec. 20, 1871	Sept. 6, 1937
HADOW, SIR (WILLIAM) HENRY, British musician and educator	Dec. 27, 1859	Apr. 9, 1937
HAFID, MULAI, former Moroccan ruler	July 9, 1870	Apr. 4, 1937
HALEVY, ELIE, French philosopher	Sept. 6, 1870	Aug. 21, 1937
HAPGOOD, NORMAN, American editor	Mar. 28, 1868	Apr. 29, 1937
HARLOW, JEAN (HARLEAN CARPENTER), American motion picture actress	Mar. 3, 1911	June 7, 1937
HASKINS, CHARLES HOMER, American mediaevalist	Dec. 21, 1870	May 14, 1937
HAYDEN, CHARLES, American financier	July 9, 1870	Jan. 8, 1937
HENEY, FRANCIS JOSEPH, American criminal prosecutor	Mar. 17, 1859	Oct. 31, 1937
HOBSON, RICHMOND PEARSON, American naval officer	Aug. 17, 1870	Mar. 16, 1937
HODGE, JOHN, British trade union leader and first minister of labour	Oct. 29, 1855	Aug. 10, 1937
HORNADAY, WILLIAM TEMPLE, American zoologist	Dec. 1, 1854	Mar. 6, 1937
HORNIMAN, ANNE ELIZABETH FREDERICKA, British theatrical producer	Oct. 3, 1860	Aug. 6, 1937
HOWE, EDGAR WATSON, Kansas editor and philosopher	May 3, 1853	Oct. 3, 1937
HUBAY, JENŐ DE, Hungarian violinist and composer	Sept. 15, 1858	Mar. 12, 1937
HUGHES-STANTON, SIR HERBERT, British landscape artist	1870	Aug. 2, 1937
ISHERWOOD, SIR JOSEPH WILLIAM, British ship designer	June 23, 1870	Oct. 24, 1937
IVES, FREDERICK EUGENE, American inventor	Feb. 17, 1856	May 27, 1937
JAMESON, JOHN FRANKLIN, American historian	Sept. 19, 1859	Sept. 28, 1937
JOHNSON, MARTIN ELMER, American explorer	Oct. 9, 1884	Jan. 13, 1937
JOHNSON, ROBERT UNDERWOOD, American poet and editor	Jan. 12, 1853	Oct. 14, 1937
KELLOGG, FRANK BILLINGS, former World Court justice and U.S. secretary of state	Dec. 22, 1856	Dec. 21, 1937
KELLOGG, VERNON LYMAN, American zoologist	Dec. 1, 1867	Aug. 8, 1937
KRAMAR, KAREL, first Czechoslovakian premier	Dec. 27, 1860	May 26, 1937
KYLSANT, OWEN COSBY PHILLIPS, British shipping executive	Mar. 25, 1863	June 5, 1937
LASZLO DE LOMBOS, PHILIP ALEXIUS, naturalized British portrait painter	June 1, 1869	Nov. 22, 1937
LEGOUIS, EMILE, French professor of English literature	Oct. 31, 1861	Oct. 16, 1937
LEHMANN, ERNST AUGUST, German dirigible expert	Mar. 12, 1886	May 7, 1937
LEMIEUX, RODOLPHE, Canadian statesman and legal expert	Nov. 1, 1866	Sept. 28, 1937
LORIMER, GEORGE HORACE, editor of the <i>Saturday Evening Post</i>	Oct. 6, 1868	Oct. 22, 1937
LUDENDORFF, ERICH, leading German strategist during the later half of the World War	Apr. 9, 1865	Dec. 20, 1937
LUDWIG, ERNST, former grand duke of Hesse	Nov. 25, 1868	Oct. 10, 1937
LUSTIG, ALESSANDRO, Italian pathologist	1857	Sept. 24, 1937
MACDONALD, JAMES RAMSAY, three-time prime minister of Great Britain	Oct. 12, 1866	Nov. 9, 1937
MCDOWELL, WILLIAM FRASER, Methodist Episcopal bishop	Feb. 4, 1858	Apr. 26, 1937
MACMONNIES, FREDERICK WILLIAM, American sculptor	Sept. 20, 1863	Mar. 22, 1937
MCNEILE, CYRIL, Lieut.-Colonel, British author who created Bulldog Drummond	1888	Aug. 14, 1937
MARCONI, GUGLIELMO MARCONI, Marquise, Italian inventor	Apr. 25, 1874	July 20, 1937
MARQUIS, DONALD ROBERT PERRY, American humourist, poet and playwright	July 29, 1878	Dec. 29, 1937
MARRINER, JAMES THEODORE, American diplomat	Mar. 27, 1892	Oct. 12, 1937
MASARYK, THOMAS GARRIGUE, Czechoslovakian statesman	Mar. 7, 1850	Sept. 14, 1937

Name	Birth Date	Death Date
MASOOD, SIR SYED ROSS, Indian Moslem educationist	Feb. 15, 1880	July 30, 1937
MAYO, ADMIRAL HENRY THOMAS, American naval officer	Dec. 8, 1856	Feb. 23, 1937
MELLON, ANDREW WILLIAM, American statesman and financier	Mar. 24, 1855	Aug. 26, 1937
MILLS, OGDEN LIVINGSTON, former U.S. secretary of the treasury	Aug. 23, 1884	Oct. 11, 1937
MOLA, GENERAL EMILIO, Spanish rebel	1887	June 3, 1937
MORE, PAUL ELMER, American critic and author	Dec. 12, 1864	Mar. 9, 1937
MORROW, JAY JOHNSON, American soldier and administrator	Feb. 20, 1870	Apr. 16, 1937
NORRIS, WILLIAM FOXLEY, Dean of Westminster	Feb. 4, 1859	Sept. 28, 1937
OGDEN, ROLLO, American journalist and editor of <i>The New York Times</i> since 1922	Jan. 19, 1856	Feb. 22, 1937
OLAYA HERRERA, ENRIQUE, Colombian statesman	Nov. 12, 1881	Feb. 18, 1937
ORDJONIKIDZE, GREGORY KONSTANTINOVICH, Soviet politician	1886	Feb. 18, 1937
PAGE, THOMAS WALKER, American economist	Dec. 4, 1866	Jan. 13, 1937
PAINE, ALBERT BIGELOW, American author	July 10, 1861	Apr. 9, 1937
PATTON, RAYMOND STANTON, Admiral, director of U.S. Coast and Geodetic Survey	Dec. 29, 1882	Nov. 25, 1937
PEEL, WILLIAM ROBERT WELLESLEY PEEL, 1st Baron, former Secretary of State for India and chairman of the Royal Palestine Commission	Jan. 7, 1867	Sept. 28, 1937
PERIN, CHARLES PAGE, American metallurgist	Aug. 23, 1861	Feb. 16, 1937
PERKINS, OSGOOD, American actor	May 16, 1892	Sept. 21, 1937
PIERRE, HENRI CONSTANT GABRIEL, French composer	Aug. 16, 1863	July 17, 1937
POLLARD, JOHN GARLAND, American lawyer and administrator	Aug. 4, 1871	Apr. 28, 1937
POLLOCK, SIR FREDERICK, British legal expert	Dec. 10, 1845	Jan. 18, 1937
POMERENE, ATLEE, U.S. senator and Teapot Dome prosecutor	Dec. 6, 1863	Nov. 12, 1937
POPE, JOHN RUSSELL, American architect	Apr. 24, 1874	Aug. 27, 1937
RAVEL, MAURICE, French composer	Mar. 7, 1875	Dec. 28, 1937
ROBINSON, HENRY MAURIS, California banker	Sept. 12, 1868	Nov. 3, 1937
ROBINSON, JOSEPH TAYLOR, U.S. Senate majority leader	Aug. 29, 1872	July 14, 1937
ROCKEFELLER, JOHN DAVISON, American capitalist	July 8, 1839	May 23, 1937
ROOT, ELIHU, American lawyer and statesman	Feb. 15, 1845	Feb. 7, 1937
ROSE, SIR (HUGH) ARTHUR, Scottish educator and statesman	1875	Aug. 14, 1937
ROTHSCHILD, LIONEL WALTER ROTHSCCHILD, 2nd Baron, British zoologist	Feb. 8, 1868	Aug. 27, 1937
ROUSSEL, ALBERT, French composer	Apr. 5, 1869	Aug. 24, 1937
RUBIO Y LLUCH, ANTONI, Spanish Catalan scholar	July 24, 1856	June 9, 1937
RUNCIMAN, WALTER RUNCIMAN, 1st Baron, British shipping executive	July 6, 1847	Aug. 13, 1937
RUTHERFORD, ERNEST RUTHERFORD, 1st Baron, British physicist	Aug. 30, 1871	Oct. 19, 1937
SHEPPARD, HUGH RICHARD, canon of St. Paul's in London	1880	Oct. 31, 1937
SIMONS, WALTHER, former German foreign minister and president of Supreme Court of Reich	Sept. 24, 1861	July 15, 1937
SMITH, ANNIE LORRAIN, British botanist	Oct. 23, 1854	Sept. 7, 1937
SMITH, SIR GRAFTON ELIOT, British anthropologist	Aug. 15, 1871	Jan. 1, 1937
SMYTH, HERBERT WEIR, American professor of Greek	Aug. 8, 1857	July 16, 1937
SNOWDEN, PHILIP SNOWDEN, 1st Viscount, British statesman	July 18, 1864	May 15, 1937
SOMERVELL, SIR ARTHUR, British composer	June 5, 1863	May 2, 1937
STEVENSON, JAMES ALEXANDER, British sculptor	Oct. 18, 1881	Oct. 5, 1937
STIEGLITZ, JULIUS OSCAR, American chemist	May 26, 1867	Jan. 10, 1937
STRATHCARRON, IAN MACPHERSON, Scottish statesman	1880	Aug. 14, 1937
SWIFT, SIR RIGBY, British jurist	1874	Oct. 19, 1937
SZYMANOWSKI, KAROL, Polish composer	1883	Mar. 29, 1937
TANNER, HENRY OSSAWA, American negro painter	June 21, 1859	May 25, 1937
THOMSON, ELIHU, American electrical engineer and inventor	Mar. 29, 1853	Mar. 13, 1937
THWING, CHARLES FRANKLIN, American educator	Nov. 9, 1853	Aug. 29, 1937
TONKS, HENRY, British painter and art instructor	1862	Jan. 8, 1937
TUKHACHEVSKY, MIKHAIL NIKOLAEVICH, Russian marshal	1893	June 12, 1937
URIU, BARON SOTOKICHI, Japanese admiral	1857	Nov. 11, 1937



Name	Birth Date	Death Date
VANDERLIP, FRANK ARTHUR, American banker	Nov. 17, 1864	June 29, 1937
WARBURG, FELIX M., American financier and philanthropist	Jan. 14, 1871	Oct. 20, 1937
WHARTON, MRS. EDITH NEWBOLD JONES, American novelist	Jan. 24, 1862	Aug. 11, 1937
WHITE, MAUDE VALERIE, British song composer	June 23, 1855	Nov. 2, 1937
WIDOR, CHARLES-MARIE, French organist and composer	Feb. 22, 1845	Mar. 12, 1937
WISE, THOMAS JAMES, British bibliographer of English authors	Oct. 7, 1859	May 13, 1937
ZACHRISSON, ROBERT EUGEN, Swedish professor of English	Jan. 15, 1880	July, 1937

**Ocean Liners:** see SHIPBUILDING; SHIPPING, MERCHANT MARINE: *Passenger Business*.

**Oceanography.** Being a comparatively young science, at least on its geophysical side, oceanography is still largely in the descriptive stage. Observations are difficult and expensive to get, and progress is consequently slow, though helped by parallelism, when it exists, with certain problems in meteorology.

General interest is centred chiefly on the identification of oceanic water masses and their movements. This year the "Discovery II" (Great Britain) completed her fourth commission in the Southern ocean. The "Meteor" (Germany) has begun her survey of the north Atlantic with a four months' cruise off Cape Verde. Since her survey of the south Atlantic in 1925-27, she has made four cruises in the Denmark strait region. The reports are published of the "Marion" and "General Greene" (United States) expeditions (between 1928 and 1935) to the Labrador sea, and of the "Atlantis" (United States) expeditions in 1933 and 1934 to the Caribbean and Cayman seas. The work of the latter ship in the north-western north Atlantic was reported last year (*Papers Phys. Oceanogr. Meteorol.*, Woods Hole Oceanogr. Inst., IV, 4, 1936). Most of the countries bordering the north-eastern north Atlantic (countries belonging to the International Council for the Exploration of the Sea) contribute data for waters between Portugal and Greenland, and the U.S.S.R. have worked in the Kara sea. Hydrological observations are made from their station on the ice, which has drifted rather rapidly from the Pole roughly along the meridian of Greenwich. Regular observations are made by Japan in the adjacent seas, which have helped to furnish data for comparison of the Kuroshio and the Gulf Stream. The latter is evidently a much more important feature of the Atlantic than the former is of the Pacific.

The most important result of recent studies is the recognition of certain broad features common to the three great oceans. The hydrosphere is divided into two primary regions, termed (borrowing from meteorology) the troposphere and stratosphere; they are separated by a thermocline in the depths (500-1,000 metres) and the polar convergences ("fronts") in roughly 50° latitude, and the stratosphere lying beneath, and polarwards of the troposphere. The circulations in these regions are distinct, the exchange taking place through the boundaries being small. The position of the antarctic convergence has been mapped, and appears to change little. It has also been found that, while the relative position of the water masses is similar all round the Antarctic continent, the bulk of the bottom water is formed in the Weddell sea, whence it moves eastwards and northwards.

The dynamical methods, based on Bjerknes's theorem, used for calculating current-speeds, appear inadequate sometimes to account for all the motion, possibly when there are strong vertical components. These methods have the general limitation, too, that to get absolute velocities, reference surfaces in which the motion is known—or nil—are required. The selection of suitable datum

surfaces is one of the chief difficulties.

Experimental studies are being made of the dynamics of ocean currents, mainly in relation to diffusion processes, internal waves, adjustment of velocity to pressure gradients, etc. In narrower waters, considerable success has been attained in distinguishing water masses by their plankton, and by their content in various salts. It has been observed that in recent years, concurrently with an increase in atmospheric circulation, there has been a considerable extension of the influence of the Gulf Stream towards the Pole. Not only in the Arctic has the water temperature increased but the effect is felt even in the English Channel, the rise being about 0.5° C. On the chemical side, the greatest achievement has been the work on the calcium carbonate equilibrium. (J. R. L.)

**Officers Reserve Corps:** see ARMIES OF THE WORLD: *Military Service*.

**Ogden, Rollo** (1856-1937), American journalist, editor of *The New York Times* (1922-37) and of *The New York Evening Post* (1903-20). He was born at Sand Lake, N.Y., Jan. 19, 1856, and graduated from Williams college in 1877. After attending the Union Theological seminary, he was ordained to the Presbyterian ministry in 1881. His journalistic career began in 1891 when he became a member of the editorial staff of *The Post*, his attacks on Tammany Hall aiding the election of reform officials in 1894 and 1901. As editor, he advocated civil service reform, woman suffrage, industrial legislation and co-operation for world peace. This work was continued on *The Times*, of which he was still editor at his death in New York city on Feb. 22, 1937.

**O. Henry Memorial Awards:** see LITERARY PRIZES: *United States*.

**Ohio**, north central State of the United States, popularly known as the "Buckeye State"; area, 41,040 sq.mi.; population (1930 census), 6,646,697, estimated July 1, 1937, 6,733,000. Capital, Columbus, with a population of 290,564 (1930). Other cities with over 100,000 were: Cleveland, 900,429; Cincinnati, 451,160; Toledo, 290,718; Akron, 255,040; Dayton, 200,982; Youngstown, 170,002; and Canton, 104,906. Of the State's population, 4,507,371 were urban, or 67.8%; native white 5,686,985; foreign born 644,151; and coloured, 309,304.

**History.**—Ohio's flood disasters in 1937 were the greatest in its history. First warnings of unusual high water in the Ohio river were received Jan. 14. Four days later, all river cities from Steubenville to Cincinnati were inundated. On Jan. 21, it was estimated 80,000 Ohioans were homeless. That day a flood stage of 72.3ft. was recorded at Cincinnati. Gas had been shut off in most of the cities and electric power plants were closing. On Jan. 22, the estimated number of flood refugees in Ohio had risen to 140,000 and the State began to raise a rescue army. One day later the American Red Cross took over the relief work. Thousands were in need at many cities, especially at Portsmouth where both a famine and a shortage of drinking water were faced. On Jan. 24, the Ohio river at Cincinnati had risen to 77.4ft. and a fire had broken out there which caused a loss of more than \$1,000,000. There were reports of looting at Portsmouth. The next day it was estimated that 550,000 were then homeless. City Manager C. A. Dykstra was given complete control of flood activities in Cincinnati and Gov. Martin L. Davey of Ohio signed an emergency act passed by the State assembly allotting \$250,000 to flood relief. On Jan. 28, the river reached a flood stage of 79.99ft. at Cincinnati, the highest in history. By that time, the Red Cross



estimated, 750,000 had been rendered homeless in Ohio. Fourteen lives had been lost. Flood water receded rapidly after Jan. 27 but the work of rebuilding continued for months.

A year of strikes in Ohio began Jan. 16 when 300 members of the Gas Employees Union walked out at Toledo. Seventy thousand customers of the Toledo gas company were affected. This strike

was followed on Jan. 26 with one at the Toledo plant of the Libbey-Owens-Ford Glass Company. The glass workers strike was settled within four days by wage increases of eight cents an hour. After there had been minor labour troubles in April at Akron rubber plants, strikes broke out in the neighbouring cities of Canton and Massillon on May 26. Four steel mills were affected in Canton, the Stark, the Berger Manufacturing Co., the Alloy Steel Division and the Canton Tin Plate. One was affected in Massillon, the plant of the Republic Steel Corporation. These strikes immediately spread to Cleveland, Youngstown and Warren. On June 9, there were riots at the Republic Steel's Bessemer plant in Youngstown. These were followed, June 18, by riots at the steel plants in Canton. The next day, rioting was resumed in Youngstown and one man was killed and fourteen injured. On June 21, Gov. Davey ordered several companies of the Ohio National Guard to Youngstown and Warren. Within two days, the troops had restored order and on June 25 the Youngstown mills had begun to reopen. Disorders continued in Canton, culminating in another riot there, July 1. Troops were sent in. Four days later, the national guardsmen were moved from Canton and Warren to Cleveland when there was rioting at the steel mills. This series of riots was ended with the one at Massillon on July 11 when one person was killed and six others were shot. (Guardsmen were sent to Massillon. A few days later, the steel mills in all the Ohio cities affected by the strikes were preparing to reopen.)

The general assembly of the State convened at Columbus, Jan. 2. Keith Lawrence of Cleveland was elected floor leader of the Senate. Proposed unemployment relief legislation was debated throughout January but the legislature recessed Jan. 27 without having taken any action to provide funds to the various cities which were demanding State aid. Upon reconvening, the Senate passed a bill to provide \$4,000,000. On April 5, Gov. Davey ordered that the Ohio National Guard prepare to take over relief duties throughout the State. This action resulted in protests from many cities and the order was rescinded after a large delegation of objectors had stormed the governor's office in the State capitol on April 9, had been clubbed by police and evicted. On April 15, all State relief to cities stopped. Several municipalities put special relief tax levies up to a vote of their people but in nearly every case the levies failed because the legislature had stipulated that all such measures must be carried by a majority of 65% of those voting. Efforts were made to have the Assembly reduce this majority to 55% but the lower house on Dec. 21 defeated a bill which would have accomplished that purpose.

On Dec. 20, by a vote of 21 to 5, the Senate adopted a resolution creating a committee with almost unlimited powers to investigate all departments of the State government. Former Senator James Metzenbaum of Cleveland was chosen as special



MARTIN L. DAVEY, governor of Ohio

counsel for the committee and the investigation began Dec. 21.

**Agriculture, Manufactures, Mineral Production.**—In 1935 Ohio had 255,146 farms covering 22,857,692 ac. with crops valued at \$96,151,000, and livestock items worth \$195,903,000. Manufactures during the same year were valued at \$3,685,441,642 with steel products (\$478,606,677), rubber tires (\$299,321,191), motor vehicles and parts (\$272,793,381), electrical machinery (\$161,267,421), and meat-packing (\$109,891,813). Of the mineral output of \$126,133,670, coal and clay products led with a value of slightly over \$35,000,000 each. Pig-iron production, including out-of-State materials was set at \$93,530,895. (P. By.)

**Ohio River:** *see* MISSISSIPPI RIVER SYSTEM.

**Ohio State University.** Formally established as a land-grant institution in 1870, the Ohio State university opened its doors on Sept. 17, 1873, to a student body of 17. In the autumn quarter of 1937 the full-time, resident enrolment reached a record figure of 12,827. The annual enrolment, including summer quarter, is 16,670. Centrally located in Columbus, the capitol city of Ohio, the university draws its student body from all 88 counties, as well as from other States and nations. It has a teaching staff of 1280.

During 1937 a new building has been erected for the school of social administration and an addition provided at University hospital to house out-patient and isolation departments of the college of medicine. Additional dormitory space has been provided under the stadium, enabling the university to house a total of 400 men in its co-operative dormitories at \$125 per year for room and board.

An exploratory program has been provided in the college of arts and sciences for students undecided on their college programs. The year has seen an expansion of the Ohio State University Research Foundation, to make campus facilities and personnel of greater use to industry, and the creation of a new Ohio State University Development Fund, to secure gifts from alumni and others for university purposes.

The university, which is co-educational, includes colleges of agriculture, arts and sciences, commerce and administration, dentistry, education, engineering, law, medicine, pharmacy, and veterinary medicine, a graduate school, and special schools of home economics, journalism, nursing, optometry, and social administration. Its plant consists of 80 buildings and 1200 ac., of which 300 are in campus and 900 in farm.

**Oil:** *see* PETROLEUM.

**Oils and Fats, Vegetable and Animal:** *see* VEGETABLE OILS AND ANIMAL FATS.

**Okefenokee Wildlife Refuge:** *see* BIRD REFUGES.

**Oklahoma,** the forty-sixth State of the United States, and popularly known as the "Sooner State," has a total area of 70,057 square miles. The population in 1930 was 2,396,000 (estimated July 1, 1937, as 2,548,000). The capital and largest city is Oklahoma City, population 185,389 (estimated, 1938, 215,000); the second largest city is Tulsa, 141,258 (estimated 160,000). Of the State's population, 821,681 were urban, or 31%; 2,095,671 were native white; 26,753, foreign-born white; 172,198, coloured; and 92,725, Indian.

**History.**—Oklahoma was admitted to the Union, Nov. 16, 1907, formed by the combination of two territories, Oklahoma Territory and Indian Territory. The constitution as adopted provided for an executive branch, to consist of the governor and twelve other elective officials; a legislative branch consisting of a senate of 44 members and a house of representatives limited to



109 members to meet biennially; and a judicial branch to consist of a supreme court, a criminal court of appeals, and certain subordinate courts. The governor is Ernest W. Marland, elected in 1934 to serve for a term of four years. The next gubernatorial election is in 1938 (primary, July; general election, November), the incumbent being constitutionally ineligible to re-election. By action of the Sixteenth Legislature (1937) the run-off primary was abolished and the candidate receiving a plurality in the party primary advances to the general election. In the Federal election of 1936, Oklahoma cast 501,069 for Roosevelt and 245,122 for Landon.



ERNEST WHITWORTH MARLAND, governor of Oklahoma

**Education.**—The educational institutions include the University of Oklahoma, at Norman (enrolment in residence, 7,237); Oklahoma Agricultural and Mechanical College, Stillwater (1937-38 enrolment, 5,520); Oklahoma College for Women, Chickasha; Colored Agricultural and Normal University, Langston; six State teachers' colleges; four secondary agricultural schools; four junior colleges; and six independent senior colleges.

There are 16 municipal junior colleges and 838 high schools. The total elementary and high-school district enrolment in 1936 was 658,969.

**Charities and Corrections.**—The hospital and eleemosynary institutions include five mental hospitals, three tubercular sanitariums, two orphans' homes, school for the deaf, and school for the blind. The penal and corrective institutions include a penitentiary and its sub-penitentiary, a reformatory, and four schools of detention and correction.

**Banking and Finance.**—Of the 77 counties, 69 are in the Tenth (Kansas City) Federal Reserve District and eight in the Eleventh (Dallas) District. There are 185 banks under State supervision. In 1936, 387 banks carried Federal Deposit Insurance and 18 did not. Bank deposits stood at \$416,127,000 on June 30, 1936, with total resources amounting to \$467,131,000. State expenditures for 1937-38 were estimated at \$99,013,862. There is at present no property tax, the main sources of revenue being a gasoline tax, a sales tax, a production tax, and an income tax. The State debt stood at \$10,504,000 in July 1937.

**Agriculture, Manufactures, Mineral Production.**—The chief agricultural commodities are wheat, cotton, corn, and grain sorghums. The total value of agricultural products in 1936 was \$94,000,000 (estimated 1937, \$155,000,000). The wheat and cotton production for 1937 is estimated at \$92,000,000 as against a production of \$46,000,000 in 1936. The principal mineral products are petroleum, lead, zinc, and coal. There is a known reserve of 3,500,000,000 bbls. of petroleum and in 1937 there was a pipeline run of 607,702 bbls. daily.

In 1937, there were produced 1,327,741 tons of coal and 252,133 tons of lead and zinc. The chief manufacturing interests are glass, cement, flour, brooms, gasoline, and all types of refinery products. The total value of manufactured products in 1935 was \$282,658,470. (R. Gtr.)

**Olaya Herrera, Enrique** (1881-1937), Colombian statesman, served as president from 1930-34. At the time of his death in Rome, Feb. 18, 1937, he

was Minister to the Vatican. He was born at Guateque on Nov. 12, 1881. Following graduation from the University of Bogota in 1904, he entered journalism, founding in succession *El Patriota*, *Gaceta Republicana*, and *Diario Nacional*. He made his political debut in 1910 as a member of the National Assembly. After serving as Minister of Foreign Affairs, he became Minister to Chile in 1912 and to Argentina in 1913. During 1917-18 he was a member and vice president of the Chamber of Deputies and during 1920-21 senator from the Department of Tolima. While again serving as Minister of Foreign Affairs in 1921, he induced the Colombian Congress to ratify the \$25,000,000 treaty which settled the difficulties between Colombia and the United States over the Panama Canal which had been pending since 1903. As Minister to the United States (1922-28), he took an active part in promoting better understanding between the two Americas. Elected in 1930 the first Liberal president in 45 years, he won such confidence that Colombia was one of the few South American countries to escape revolution during the depression period. To meet the emergency, Congress conferred on him powers amounting virtually to a financial dictatorship.

**Old Age Insurance:** see SOCIAL SECURITY.

**Old Age Pension:** see LABOUR LEGISLATION; RELIEF.

**Oman:** see ARABIA.

**Ontario,** one of the original provinces of the Dominion of Canada; area, 412,582 sq.mi.; population according to the Dominion census of 1931, 3,431,683, estimated Jan. 1, 1938, 3,690,000. Capital, Toronto, 631,207. Of the Province's population 2,095,992 are urban, or 61%; 2,794,631 native born or 81%.

The Industrial Standards Act of Ontario provides that the Minister of Labour, upon petition of representatives of the employers or employees in any industry, may convene a conference or series of conferences of employers and employees in that industry, in any zone or zones, to investigate the conditions of labour in such industry and to negotiate standard hours of labour and rates of pay. If the Minister is satisfied that an agreement in writing has been reached, he may approve it and such agreement shall be in force "during pleasure" or for a period not exceeding one year. Such agreement may also be made binding upon the industry throughout the Province. The Minimum Wage Board has authority to enforce the provisions of the act.

Much attention has been directed to the policy of the Government of Ontario in supplying cheap light and power to the people of the Province through the publicly owned and controlled Hydro-Electric Power Commission. The Commission provides electric services to over 700 municipalities, comprising nearly all of the cities and towns in the Province as well as many small communities and local areas. The actual distribution within a municipality is performed by the municipality itself, under the supervision of the Commission. The capital of the Commission and Municipal Utilities amounts to \$408,100,000 (£81,620,000); reserves \$148,474,209 (£29,680,000). Rates are low and the service is excellent. The net value of the total production of the Province in 1934 was \$1,025,262,177 (£205,052,000), an increase of 25% over the preceding year. The gross annual agricultural revenue in 1935 was \$313,077,000 (£62,613,000); of mineral products for 1936, \$184,543,853 (£36,908,000).

The provincial election of 1937 resulted in the return to power of the Liberal Party under the leadership of the Hon. Mitchell Hepburn. The party standing of the Provincial Legislature comprises 63 Liberals, 23 Conservatives and 4 Independents. The lieutenant-governor is the Hon. Albert Matthews. Ontario is represented in the Dominion Parliament by 24 senators, appointed



for life and 82 members of the House of Commons, elected for a term of five years or less.

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**Opera:** see MUSIC.

**Orange Free State:** see SOUTH AFRICA, UNION OF.

**Oranges.** All records for imports of summer oranges (May to November, 1937) were broken by the United Kingdom, which in that time received 6,037,000 boxes of oranges. This compares with 4,842,000 boxes in the same period of 1936. The bulk of the shipments were from South Africa, 3,377,000 boxes, and from Brazil, 2,545,000 boxes. Only 22,000 boxes came from the United States which in 1936 shipped 612,000 boxes to the United Kingdom and 1,505,000 in 1935. The huge decrease in United States' shipments is accounted for, partly, by the freeze that damaged the California crop. Oranges, however, are one of the many agricultural products on which Britain grants preference duties to empire countries, as against other countries. The South African exports of oranges to the United Kingdom in 1936 were 2,143,000 boxes. Of Britain's 1937 imports 67,000 boxes were from Rhodesia. Other countries shipped 48,000 boxes.

The total production of oranges in the United States in 1937 was 67,067,000 boxes, the United States Department of Agriculture estimates. This compares with 55,174,000 boxes in 1936 and an annual average of 48,930,000 boxes for the five-year period of 1928-32. These figures are for the seven orange-growing States of California, Florida, Texas, Arizona, Louisiana, Alabama and Mississippi. Production by states for 1937 was as follows, with figures in parentheses being for 1936: California, 40,461,000 boxes (30,063,000). The 1928-32 annual average was 33,022,000 boxes. Of the 1937 California crop 17,422,000 boxes were Valencias, for which the five-year average crop is 25,536,000 boxes, and 16,829,000 boxes in 1936. Navels and other varieties produced 15,600,000 boxes (13,234,000) and a five-year average of 14,925,000 boxes. In Florida, the total orange production in 1937 was 24,000,000 boxes (22,500,000) and a five-year average of 15,105,000 boxes. Early and midseason varieties produced 12,800,000 boxes in 1937 and 12,000,000 in 1936. Valencias were 8,700,000 boxes (7,500,000), and tangerines 2,500,000 boxes (3,000,000).

Production in the other five States was: Texas, 1,900,000 boxes (2,000,000) and an annual 1928-32 average of 294,000 boxes. Arizona, 323,000 boxes (220,000) and an average of 133,000. Louisiana, 238,000 boxes (309,000) and an average of 243,000 boxes. Alabama, 78,000 boxes (56,000) and a five-year annual average of 100,000 boxes. Mississippi, 67,000 boxes (26,000) and 41,000 average. (S. O. R.)

**Orchids:** see HORTICULTURE: *Orchids*.

## Ordjonikidze, Gregory Konstantinovich

(1886-1937), Soviet politician, was a Georgian by birth and joined the Bolshevik party when only 17. Arrested and exiled to Siberia four years later, he escaped to Paris. Re-arrested after his return to Russia about 1912, he was exiled to the Yakutsk region of north-eastern Siberia. There he met Stalin and exhibited qualities that were to make him a Soviet leader. On the outbreak of the February revolution of 1917, he was released under the amnesty granted all political prisoners. After the Bolsheviks came into power, he served as special commissar for the Ukraine and for a time was president of the Caucasus Revolutionary

Committee. When Stalin assumed the leadership of the Communist party after Lenin's death, he became a member of the Political Bureau of the Central Executive Committee. One of the principal organizers of the first Five-Year Plan, he served as chairman of the Supreme Economic Council and later as Commissar for Heavy Industries. His death occurred in Moscow on Feb. 18, 1937.

**Oregon,** the middle of the three Pacific coast States, popularly known as the "Beaver State," and the thirty-third State admitted to the United States; area 95,607 sq.mi.; population according to the U.S. census of 1930, 953,786, estimated July 1, 1936, 1,017,000. Capital, Salem, 26,266. The only larger city is Portland, 301,815. Of the State's land area of 61,188,480 ac., 17,357,549 ac. are in farms, 19,278,160 in timber lands, 16,000,000 in public domain. The native white population is 831,554 or 87.2%; Negroes, 2,234; other races, 14,523. Urban population, 489,746, or 51.3%; rural-farm, 221,545; rural non-farm, 242,495.

**History.**—Oregon gave Mr. Roosevelt a large majority in 1936 as in 1932. The normally Republican State legislature was in Democratic hands in 1937. The legislature concerned itself primarily with stricter hunting and fishing laws; with forwarding the State building program; with attempting to meet the requirements of the Roosevelt social security program. Toward the close of 1937, the new State capitol building, to replace the old one destroyed by fire, was well along; plans were progressing for the new State library and office building, authorized by the 1937 legislature. The State was in a favourable position, except that the jurisdictional difficulties of the American Federation of Labor and the Committee for Industrial Organization had closed many logging camps and lumber mills and some industries.

The State's chief officers were Governor Charles H. Martin, Secretary of State Earl Snell, Treasurer Rufus C. Holman, Attorney-General I. H. Van Winkle, Superintendent of Public Instruction Rex Putnam, and Chief Justice Henry J. Bean.

**Education.**—During the year, Charles A. Howard resigned as State superintendent of public instruction to become president of the Eastern Oregon State Normal school and was succeeded by Rex Putnam. President Clarence Boyer also resigned as president of the University of Oregon. The school census gave 259,610 children of school age, 4 to 20; school enrolment, 1935-36, 203,162 (grades 144,356; high schools 58,806); expenditures, 1935-36, \$22,074,876; average teacher's salary—grades, \$880.62; high schools, \$1,309.78. **Charities.**—From Jan. 1, 1936, to Sept. 30, 1937, the State paid out \$8,111,438 toward general relief, including care of the poor, old-age assistance, blind assistance and aid to dependent children.

**Banking and Finance.**—On Dec. 31, 1936, 94 reporting banks had resources of \$333,507,128.44; liabilities, \$307,036,086.11; total capital, surplus, undivided profits and reserves, \$25,846,959.03. Fifty-five banks with resources of \$46,645,748.53 were State banks; 39 with resources of \$286,861,379.91 were national. The State's bonded indebtedness was reduced from \$66,062,810 on January 1, 1928, to \$46,585,010 on Oct. 1, 1937. The Treas-



CHARLES HENRY MARTIN, governor of Oregon



ury reports: cash balance, July 1, 1936, \$10,811,600.20; total receipts during year, \$61,374,667.98; total disbursements, \$60,909,605.53; cash balance June 30, 1937, \$11,276,662.65.

**Agriculture and Manufactures.**—In Sept. 1937, the U.S. Department of Agriculture estimated the principal crops for 1937 as follows: winter wheat, 13,200,000bu.; spring wheat, 7,140,000bu.; oats, 11,492,000bu.; barley, 4,221,000bu.; hops, 23,400,000lb.; potatoes, 7,840,000bu.; hay, 1,792,000 tons; apples, 3,630,000bu.; pears, 3,570,000bu.; prunes, 53,000 tons. Total value of live stock on the farms of the State was estimated at \$69,758,000 in 1937, compared to \$61,693,000 in 1936 and \$46,841,000 in 1935.

The U.S. Census of Manufactures, 1935, shows the number of establishments falling from 2,450 in 1929 to 1,358 in 1933, then climbing to 1,722. In the same years the number of wage-earners fell from 65,390 to 41,052, then increased to 52,216. In 1935 the State's manufactured products had a value of \$265,437,426 and \$53,070,000 was paid out in wages. The most important industries were lumber and timber, \$72,783,275; flour and grain, \$22,998,368; canned fruit and vegetables, \$17,651,421; meat-packing, \$13,010,125; paper, \$12,361,310. (P. R. K.)

**Oslo Convention:** see TRADE AGREEMENTS: *British Empire, Europe and Asia.*

**Ottawa,** the capital of the Dominion of Canada, is situated on the Ottawa river in the Province of Ontario. Directly across the river is the city of Hull in the Province of Quebec. The population of Ottawa is 126,872; of the metropolitan district of Ottawa 175,988.

It will be noted that Ottawa, although the capital of Canada, is not situated in a Federal District, but is wholly self-governing, subject, of course, to the condition that it obtains its charter from Ontario, of which it is an integral part. There is a growing feeling at the present time (1938) that Ottawa and its environment should be under Federal jurisdiction. This point of view is supported by the fact that a very considerable part of the real property in the city is owned by the National Government, and also by the fact that the National Government has spent large sums of money in beautifying the city by establishing and maintaining parks and driveways. Ottawa is an important manufacturing centre of wood and its products. The gross value of manufactured products in 1937 was \$25,406,000 (£5,081,000). The gross postal revenue in 1937 was \$1,026,500 (£205,300). Its most important educational institution is the Université d'Ottawa.

**BIBLIOGRAPHY:** *The Canada Year Book; Handbook of the City of Ottawa.* (J. C. HE.)

**Outdoor Advertising:** see ADVERTISING: *Outdoor Advertising.*

**Outer Mongolia:** see MONGOLIA.

**Oxford Groups,** or First Century Christian Fellowship, a religious movement founded in 1921 by Dr. Frank N. D. Buchman, a Lutheran minister (born Pennsylvania, June 4, 1878). The Groups, as inaugurated, have had no defined membership or organization. Anywhere and at any time, persons inside or outside the churches may meet as "a group," with the utmost freedom of opinion and association. Such groups are to be found in many countries. According to the belief and practice of the Groups, the life of the individual may be "changed" and brought under "God Control," interpreted as adjustment to circumstances, guidance in decisions, a deepening sense of obligation to others and the "sharing" of experience. The public meetings of the Groups are devoted largely to such

testimony. Within the Groups, it is the aim to promote co-operation in the social as well as spiritual sphere and friends are accustomed to address one another by their first names.

The Groups hold "house parties" frequently in well known resorts, the attendance being large and often influential. Critics of the movement suggest that there is too much seeking and advertising of prominent and wealthy adherents, and latterly the Groups have developed their activities somewhat on the spectacular side. On the other hand, there is clear evidence that many lives have been—to use a Group word—fulfilled. The movement is especially successful in Great Britain, South Africa and the Scandinavian countries.

**Oxford University.** In recent years the recognition of the educational value of new subjects, together with the greater specialization of research, has led to certain related developments in the university. The problem of administration has been to foster these developments without prejudice to the traditional disciplines.

In 1937 there were 4,920 students in residence (4,057 men and 863 women), some of whom were reading for diplomas, research degrees or pass schools, or were special classes of students, such as civil service probationers. Less than 200 were reading for pass schools.

Since 1931, research students have increased from 240 to 398. The biggest percentage increases are in Literae Humaniores ("greats") (20-41), social studies (12-41), and Oriental languages (3-13).

The most significant new university (as apart from college) buildings undertaken or projected since 1926 are: (a) extensions of the Ashmolean museum of art and archaeology, the Taylor institution (modern language libraries and lecture-rooms), the Bodleian library, including the Radcliffe science library; (b) new laboratories for physics, physical chemistry and geology, and (c) new quarters for St. Catherine's Society.

Benefactions include gifts for the extension of the Bodleian library (of nearly £600,000), for the Ashmolean museum, and for archaeological studies. The outstanding gifts in recent years have been £2,200,000 and £1,000,000 respectively from Lord Nuffield for the medical school and for a post-graduate college, devoted especially to social studies. In 1937, a special appeal raised over £420,000, of which £250,000 completes the endowment of the Bodleian extension. (D. V.)

**Pacific Islands, British.** (See also FIJI; PACIFIC ISLANDS, MANDATED; NEW GUINEA; NEW ZEALAND, DOMINION OF; SAMOA.) British possessions in the Pacific ocean, apart from the Eastern dependencies, include the groups listed below and many smaller islands. They are governed under a high commissioner for the western Pacific, who is also governor of Fiji; the present high commissioner is Sir A. F. Richards, K.C.M.G.

**The British Solomon Islands Protectorate** comprises Guadalcanar, Malaita, San Cristoval, Isabel, Choiseul, New Georgia and other islands (including the Santa Cruz group), east of New Guinea. Administrative capital, Tulagi. Total land area, 15,000 square miles. Population (1931): 497 Europeans, 193 Asiatics, 93,415 natives. Revenue (1935-36), £58,465; expenditure £49,224. Exports (1935-36), £198,358, mostly copra and trocas shell; imports, £150,163.

**Gilbert and Ellice Islands Colony** includes the Gilbert group, the Ellice group, Ocean island (seat of government), Fanning island, and Christmas island. Population: Gilbert island (1936), 92 Europeans, 26,153 others; Ellice island (1935), 1 European, 4,220 others; Ocean island (1936), 195 Europeans, 495 Asiatics, 1,992



others; Fanning island (1936), 42 Europeans, 272 others; Christmas island (1927), 5 Europeans, 18 others. Total area, 204 sq.mi., excluding Christmas island, which is an atoll roomi. in circumference.

Revenue of the colony (1934-35), £52,922; expenditure, £53,983. Exports (1935), £340,068, chiefly phosphates and copra; imports, £117,060.

**The Tonga Protectorate** (the Friendly islands). Ruler, Queen Salote. Seat of government, Nukualofa. Area, 250 sq.mi.; population (1936), 342 Europeans, 499 half-castes, 31,604 Tongans. Revenue (1935-36), £66,660; expenditure, £49,904. Exports (1936), £116,539, mostly copra; imports, £92,296.

**The Phoenix Islands.**—Area, 16 sq.mi.; population, 59.

**Pitcairn Island.**—Area, 2 square miles. Pop. (1936), 202, descendants of the mutineers of H.M.S. "Bounty."

Great Britain reaffirmed, in Aug. 1937, the annexation of three uninhabited islands in the Pacific, valuable as airports or bases: Henderson island, north-east of Pitcairn; and Ducie and Oeno, north of Pitcairn. (H. V. H.)

## Pacific Islands, French.

The most important of these are New Caledonia and Tahiti.

**New Caledonia** has area 8,548 sq.mi., and population (1931) 57,164 (28,500 Polynesian and Melanesian). The capital is Nouméa (10,700). The governor is B. Siadous, appointed 1933. Economic activity improved slightly in 1937, and exports of frozen meat, copra, coffee, etc., are increasing. There are 9,884,000 ac. pasture, 11,119 ac. copra, and 8,648 ac. coffee under cultivation.

The development of mining has necessitated the immigration of coolies from Annam and Java.

**Tahiti** has area about 600 sq.mi., and population (1931) 16,781. The biggest town is Papeete (7,061). The governor, since 1935, of the islands of which Tahiti is the most important, is H. Sautot. Exports of copra, phosphates, and vanilla have increased slightly. A rather serious social problem is raised by the presence of a too large and not easily assimilable Chinese colony. (See also NEW HEBRIDES.)

## Pacific Islands, Mandated.

These former German possessions in the western Pacific comprise part of New Guinea (*q.v.*) with adjacent archipelagos, western Samoa (*q.v.*), the Marshall, Caroline, Palau, and Ladrone or Marianne islands (all north of the Equator, and administered by Japan as mandatory), and the islet of Nauru, the mandate for which is held jointly by the United Kingdom, Australia, and New Zealand.

**The Japanese Mandate.**—The Marshall islands comprise 24 islands, the chief of which is Jaluit, the seat of government. Population (1933): 433 Japanese, 9,868 natives, 10 others. The Carolines, including the Pelew or Palau islands, consist of about 549 islets, the seats of government being Palau and Yap (western group) and Truk and Ponapé (eastern group).

Population (1934): 7,213 Japanese, 30,272 natives, 69 others. The Marianne or Ladrone group consists of 14 islands (245 square miles). The seat of government is Sipan. Population (1935): 19,835 Japanese, 49,695 natives. Estimated revenue and expenditure of all the Japanese mandated islands in 1935-36 was Yen 5,978,000.

**Nauru** lies 26 mi. south of the Equator, in long. 166° E. Area: 5,396 acres. Population (1936), 179 Europeans, 1,647 Nauruans, 4 other islanders, 1,092 Chinese. Administrator, Commander R. C. Garsia, R.A.N. Revenue (1935), £23,487; expenditure, £20,666. In 1936, 826,379 tons of phosphates were exported; imports (1935) were valued at £168,595. (H. V. H.)

## Pacific Relations, Institute of.

The next triennial conference of the Institute of Pacific Relations will be in the autumn of 1939 in probably Honolulu, Manila or Java, to be announced later. The Institute, whose objectives are the furthering of amity and progress among nations bordering on the Pacific ocean, held its previous and sixth conference in 1936 in Yosemite National park, California, at which meeting the late Newton D. Baker, U.S. Secretary of War during the World War, presided. At that conference attendance was represented by the following member organizations:

The American Council, Institute of Pacific Relations, secretary, Frederick V. Field, 129 East 52nd st., New York city. Royal Institute of International Affairs, secretary, Ivison S. Macadam, Chatham House, 10 St. James square, London, S.W.1. Australian Institute of International Affairs, honorary secretary, Jack Shepherd, 369 George street Chambers, Sydney. Canadian Institute of International Affairs, secretary, Estcott Reid, 43 St. George st., Toronto. China Institute of Pacific Relations, secretary, Lin Yu-Wan, 123 Boulevard de Montigny, Shanghai. Comité d'Etude des Problèmes du Pacifique, secretary general, Roger Levy, 2 rue du Four, Paris. Japanese Council, Institute of Pacific Relations, secretary, Tomohiko Ushiba, Nihon Kokusai Kyokai, 12 Ni-chome, Marunouchi, Tokyo. Netherlands-Netherlands Indies Council, Institute of Pacific Relations, honorary secretary, J. H. Boeke, 18 Warmonderweg, Oegstgeest bij Leiden. New Zealand Branch, Institute of Pacific Relations, honorary secretary, Bruce Turner, Office of Minister of Finance, Parliament building, Wellington. Philippine Council, Institute of Pacific Relations, honorary secretary, Conrado Benitez, University of the Philippines, Manila. U.S.S.R. Council, secretary general, Y. P. Bremman, Pacific Institute, 20' Rozin st., Moscow.

**Pacifism.** During 1937, pacifism was chiefly brought to the notice of the public in Great Britain through the growth of the Peace Pledge Union. This body arose from the suggestion, made in 1934 by the late Canon H. R. L. Sheppard, that those who could sign a pledge "I renounce war and will never support or sanction another" should send him a postcard. The response was so great, that some kind of organization of signatories became inevitable. At the end of 1937, the membership, organized in 745 groups, consisted of 140,000 persons, 25% of whom were women recently admitted. This total takes into consideration a drastic winnowing of names during the year, for a good many who had taken the pledge realized later—largely because of the civil war in Spain or the call for a boycott of Japanese goods after the invasion of China—that they could not accept the full pacifist position.

The growth of the pacifist movement in the Christian churches was evidenced by the congress at Edinburgh in the summer of the Ministers' International Peace Union, attended by clergy of many countries. The Council of Christian Pacifist Groups, composed of representatives from pacifist organizations in the Anglican, Roman Catholic, and Free Churches, steadily becomes stronger; and one of the constituent bodies, the Methodist Peace Fellowship, includes 749 pacifist ministers. The council is the outcome of the activities of the Fellowship of Reconciliation, an interdenominational pacifist body formed in 1914. From the latter has also grown the American F.O.R. and the international F.O.R., with an office in Paris and considerable work in Europe.

From the wider movement have emerged the Embassies of Reconciliation. The outstanding activity of this body has been the visits of Mr. George Lansbury to Herr Hitler, Signor Mussolini, and the presidents and premiers of Czechoslovakia, Poland, and Austria. Earlier, he had had similar interviews with





THE FATE OF THE DOVE OF PEACE, as pictured by Dubosc in *Le Journal d'Humanité*, Paris

President Roosevelt, M. Blum, M. Van Zeeland, and the ministers of the Scandinavian countries.

The purpose of these visits was to win support for a proposal for a conference of the principal nations for the reconstruction of economic relations as the most practical contribution to general appeasement.

Though the World Conference of the churches on "Church and Community and State," held at Oxford in July, was able unitedly to take the absolute pacifist position, its report included, not only a statement of the pacifist's faith, but also an italicized denunciation of war as "a defiance of the righteousness of God." Moreover, the message of the conference stated, "The Universal Church . . . must pronounce a condemnation of war unqualified and unrestricted."

In the United States, the work begun in the Emergency Peace Campaign in 1936 was continued with considerable success. The American War Resisters' League attained a membership of over 55,000, and a stand was made against military training in colleges. A movement similar to the P.P.U. began in Canada, and there was considerable peace propaganda in the other British Dominions. An All-Ireland anti-war crusade on a full pacifist basis was started at the beginning of the year.

At the conference of the War Resisters' International at Copenhagen in July, it was stated that this body was carrying on work in 68 countries. At that date, over 400 men were known to be in concentration camps or prisons in France, Germany, Poland, Russia, Italy, Bulgaria, Switzerland, and elsewhere, for refusing military service on conscientious grounds. In the Scandinavian countries and Holland, there is some form of civil alternative service which, however, not all the conscripted "objectors" feel able to accept.

As the result of a conference in Paris, attended by 300 delegates, the International Pacifist Association was formed.

Members of the Society of Friends are to be found as active workers in all sections of the peace movement in Great Britain, America, and elsewhere. The society itself has its peace committees, and seeks also to express its Christian pacifist principles

through relief work and through the Quaker centres in several of the capitals of Europe.

Pacifist literature in English-speaking countries during 1937 was strongly reinforced by important books by Aldous Huxley and others. Peace bookshops supplemented the platform and street-corner propaganda of pacifism. (See also WARFARE.)

(H. W. P.E.)

**Paderewski, Ignaz Jan** (1860— ), Polish statesman and pianist. For a biography, see *Encyclopædia Britannica*, vol. 17, p. 22. Since 1925 he has resided at Morges, Switzerland. In the summer of 1937 his interview with General Holler and General Sikowski, ex-premier and war minister of Poland, attracted some attention in Warsaw, and gave rise to rumours about "the Morges front"; and in August he circulated a manifesto opposing incipient leanings towards Fascism in Poland and demanding freedom for the peasants. In September he again supported the peasants in an article in a Silesian paper, circulation of which was banned in Warsaw; and a few weeks later issued an open letter to the premier, declaring that Poland needed no dictators and rallying the people to the democratic ideal. He was awarded the G.B.E. in 1925.

**Page, Thomas Walker** (1866-1937), American economist who, in addition to acting as professor of economics at the University of Virginia from 1906-22, was chairman of the U.S. Tariff Commission from 1920-22 and vice chairman after 1930. He was born at Cobham, Va., Dec. 4, 1866, and received the Ph.D. degree from the University of Leipzig in 1896. From 1900-06 he served in posts at the universities of California and Texas. In 1926 he was American expert on the League of Nations committee which planned the World Economic Conference of 1927; and in 1934 he was appointed chairman of the Interdepartmental Committee for Reciprocity Information. In hope of promoting peace, he advocated establishment of a division of the World Court to which international trade disputes might be referred. He died at Charlottesville, Va., Jan. 13, 1937.

**Pageant of the Pacific:** see FAIRS AND EXHIBITIONS.

**Paine, Albert Bigelow** (1861-1937), American author, whose most important work was a three-volume biography of Mark Twain (1912). In addition to shorter works on Mark Twain, his other biographies included studies of Thomas Nast, George F. Baker, Lillian Gish and Joan of Arc, the French Government making him a chevalier of the Legion of Honour for his work on the Maid of France. Mr. Paine was born at New Bedford, Mass., July 10, 1861. One of the editors of *St. Nicholas Magazine* (1899-1909), he wrote several children's books as well as novels and travel studies. His death occurred at New Smyrna, Fla., April 9, 1937.

**Painting.** The art of painting, in the year 1937, was conspicuously devoid of sensational disturbances and of the belligerent efforts of subversive factions to destroy traditional standards of intelligence and taste. No new artists of international significance were discovered; no hysterical cults were born; no esoteric school arose to shock the public and win its day of notoriety. It is true that one sect, the Surrealists, attracted considerable publicity in France, England, and America; but the works of this sect, belated mixtures of subconscious debris and showmanship, were received by the public with amusement or mild indignation. As regards the contentious question of the relation of art to politics, it might be pointed out that in 1937,





"TORNADO," by John Stuart Curry, painter of the Kansas Plains

the increasing alarms and uncertainties of the world engaged the attention of groups of painters everywhere, leading them strongly to nationalistic utterances and to the opposition of war in all its forms. But the main body of artists, generally speaking, continued to work according to individual predilections, leaving political issues to statesmen and dictators.

**United States.**—In external manifestations, America was extraordinarily active in the year 1937. Art, for once, enjoyed a general awakening and contributed in no small measure to the excited spirit of nationalism. The major impetus in this direction, so far as commissions are concerned, came from the Federal Government which, having erected an elaborate machinery of administration, appropriated vast sums of money not only for the material assistance of needy artists but also for mural decorations in all parts of the country. The granting of Federal subsidies was not entirely beneficial: amateurs, in wholesale lots, were suddenly promoted to the ranks of the professionals; political influence often played a part in the awarding of important commissions, and many artists were disposed to leave their destiny to the whims or dictates of the State. But no artists of proved ability were ignored; and the bureaucrats at Washington, by co-operating with regional boards of control, rendered great service to the cause of American art.

More significant than Federal participation was the rise to national prominence of a school of native painters united in the determination to promote independence of thought and action by portraying the actualities of American life. The leaders of the school, Thomas Hart Benton, John Stuart Curry, Grant Wood, Charles Burchfield, and Reginald Marsh, succeeded in removing art from the jurisdiction of specialists and fanatics, and bringing

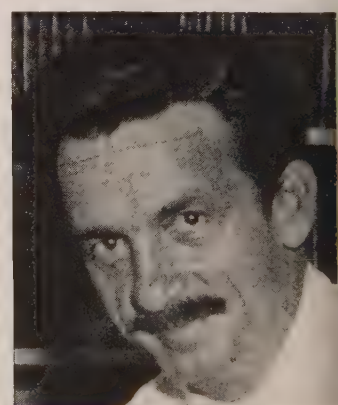
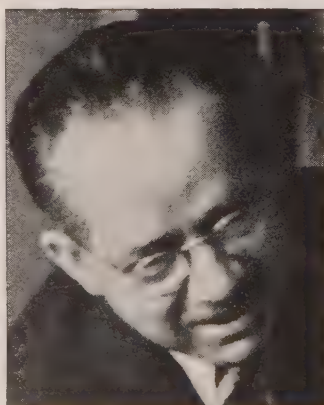
it close to the life of the common man. Aroused to action by a wealth of material hitherto proscribed on the grounds of vulgarity, they painted mural decorations of the transition of a pioneer civilization to industrialism, and easel studies of the picturesque difficulties of cotton planters, the dramatic aspects of plains and mountains, the migrations from the soil to the cities—the rapidity, turmoil and colour of a restless nation. These men and their followers founded a popular movement in art which, on the basis of accomplished work, marks the end of American subservience to European cultural fashions.

**Great Britain.**—In England, perhaps more than in any other country, painters refused to participate in enterprises to save or reform the world. The British Artists' Congress endorsed the stand of the American Artists' Congress in the latter's campaign for peace and democracy; and when Germany invited British painters to exhibit in Berlin, with specific reservations as to race and political faith, the invitation was promptly rejected. Apart from these minor flurries, the course of painting was characterized by its exceptional tranquillity and the even tenor of collective and individual aims.

Collectively, painters deviated little from the methods and practices of three schools, or influences, at work in England for many years. The first and oldest school, composed of members of the Royal Academy and the Royal Institute of Oil Painters, with their innumerable disciples, contributed nothing of particular distinction to the year's procession of pictures. The Royal Academy exhibition was technically competent but uninspired; the Royal Institute presented its usual array of conventionally safe and unarresting canvases; and coronation art, in oils and ceremonial accessories alike, was unfortunately entrusted to commercial producers.

Academic art, however, redeemed itself in a comprehensive showing of the works of Sir Joshua Reynolds—100 canvases representing the British master at every period of his career. The second school, founded on the open-air realism of Constable and the colour principles of Impressionism, maintained its prestige through its official organization, The New English Art Club, and delighted the public with notable exhibitions of paintings by P. Wilson Steer and the landscape art of R. O. Dunlop. The aims and methods of this school were more authoritatively exemplified in two centennial exhibitions of Constable's oils and water colours.

The third school, numerically small and still in bad odour with the public, continued to battle, though somewhat perfunctorily, for non-representational art and the structural devices of Cézanne. Once regarded as sensational in the extreme, the work of such modernists as Duncan Grant, Paul and John Nash, Henry Lamb, C. R. W. Nevinson, Stanley and Gilbert Spencer, and Wyndham Lewis, was overshadowed by the nightmares and eccentricities of



AMONG THE FOREMOST AMERICAN ARTISTS are, left to right: John Stuart Curry, Charles E. Burchfield, John Sloan, Thomas Hart Benton





"NOVEMBER EVENING," by Charles Burchfield, a sombre study of the Mid-west

the Surrealists. Led by the Spaniard, Salvador Dali, and a handful of British devotees, the Surrealists succeeded in infuriating the average artist and his clientele by exhibiting impossible combinations of objects in which the facts of life were distorted to symbolize Freudian dreams and abnormalities.

The influence of French Impressionism and Post-Impressionism suffered a perceptible decline in 1937, but to the collectors and dealers the French remained the masters of modern painting. Exhibition after exhibition of Gallic painting, from Ingres to Matisse, filled the London galleries, gaining the approbation of connoisseurs but adding the most formidable competition to the difficulties of the British painter.

**France.**—France, the home of modern radicalism in painting and perennially the storm-centre of controversy, was content to rest on her laurels and cultivate her foreign markets. The present School of Paris which, in its formative stage, precipitated a succession of bloodless eruptions and revolts, was officially sanctioned by the State in 1937, and allotted an exhibition room in an enormous retrospective showing of French painting. Thus the most rebellious uprising in modern art was incorporated with the French tradition as an orthodox development. Picasso, the undisputed master of the school, and his confrères, Matisse, Braque, Rouault, Lurçat, Dufy, and Leger, maintained the international prominence of Cubism and abstract design not only by their official victory in Paris but also by many exhibitions in London and New York where their canvases continued to fetch high prices. Picasso, a Spanish expatriate, enhanced his reputation by accepting the post of non-resident director of the Prado museum, and by rallying his fellow painters in active support of the royalists in Spain. This political gesture, together with a noisy demonstration of Surrealism, lent colour and excitement to an otherwise uneventful year.

While the modernists were industriously capitalizing their offi-

cial recognition, the conservative elements of French painting were not idle. The old salons, always popular with the fashionable world, but vigorously discountenanced by the followers of Cézanne, appeared again with something of their former splendour, exhibiting figure studies as correct as those of Bouguereau, and portraits in the style of Manet and Courbet. A new school of romanticists was consolidated, a group of younger artists who, in their repudiation of non-representational art, returned to the invigorating subject-pictures of Delacroix and painted dramatic conceptions for the glory of France. A third element, a decorous offshoot of Modernism, refining the styles of Cézanne, Van Gogh and Gauguin into decorations acceptable to academic juries, produced charming garniture for drawing rooms. But the activities and disagreements of the various schools were reduced to temporary unimportance by the historical loan-exhibition of French painting from the 16th century to the present time, a magnificent presentation made possible by the courtesy of European and American collectors. In this great survey the continuity of the French tradition was convincingly revealed: the passion for order and precision, the tendency towards the formalization of nature, and finally, in contemporary examples, the triumph of pattern over content, or subject-matter.

**Germany, Italy, Russia, Spain.**—In Germany, the trend of painting, by official decree, was reactionary and opposed to modernism in all its ramifications. So strong was government sentiment against contemporary French art and the various experimental schools, that many German painters of modernist affiliations, unable to work in a hostile atmosphere and denied exhibitions, emigrated to France and America. The art approved and stipulated by the State was a safe and sound art, romantic in conception, laboriously detailed and scrupulously exact in draughtsmanship. Imbued with romantic ideas, young German enthusiasts returned to the grandiose imaginings of Caspar David Friedrich and the men of the early 19th century. When working for the State, artists were regimented like soldiers, but no definite propaganda was required of them save an allegiance to the general policy of a strictly Germanic ideology. Modernist exhibitions were permitted only for educational purposes, that is to say, as examples of forbidden art, but such exhibitions seldom failed to attract large and sympathetic audiences.

In Italy there was no intervention on the part of the State, so long as artists signified their loyalty, and no official preferences for one school above another. The conservative painters, numerically preponderant, remained aloof from politics, but the more radical groups like the Futurists converted their symbolical apparatus into a flamboyant glorification of Fascism. Russia, after holding art for years in the most rigorous service of Soviet economics, relaxed her authoritarian principles and allowed the creative impulse more freedom. The result was a quiet growth of



LEADING MODERN AMERICAN PAINTERS include, left to right: Paul Cadmus, William Gropper, Grant Wood, Reginald Marsh





JEWISH WHEAT FIELD set afire by Arabs, an incident in the bloody, destructive vendetta between Jewish colonists in Palestine and native Arabs

more spontaneous painting, some of it idyllic and reminiscent of folk art. In Spain, current production was virtually non-existent, painters of all denominations either fighting on the battlefield or fighting to save the art treasures of Spain from the depredations of war.

(T. CR.)

**Paints and Varnishes.** Expansion during 1937 was due in some measure to the international armaments program, requiring finishes for ship building, aircraft construction, and the like, and to continued building. Manufacturers are now realizing that while some paint mills are suitable for making certain paints, other formulations require different types of mill. There was a marked increase in the use of the pressure bar single roll mill; for reasons of economical operation and where quantities of thinners are involved, ball and pebble mills found more extensive use.

Marked progress in finished paints was made by the use of media prepared from synthetic resins; alkyd resins were to the fore in this respect. A comprehensive system of house paint classifications has been perfected.

Developments in pigments centred round particle size and shape and conversion of pigment water to pigment oil dispersions. Progress in white pigments includes the discovery of an organic pigment prepared by reaction between polyhalogenated aralkyl halides and alkali metal salts of halogenated phenols. Heat and hydrolysis resistance and high refractive index were claimed. Graphite was suggested as an anticorrosive pigment; outstanding properties were claimed.

The trend in driers is towards materials causing film drying without further oxidation effect; production on a commercial scale of monoglycerides of drying oils produced new possibilities. Work continues on this problem.

While paint manufacture is carried on in most countries, the largest output may be credited to the United States, Great Britain, and Germany.

Available data for the United States give the gross value of products as \$289,441,956 (£57,888,391) for 1933, with 22,880 employees engaged, and 1936 Dominion Bureau of Statistics returns for the Canadian industry gave gross value of products as \$22,651,225 (£4,530,245) with 3,124 persons employed. (See also TITANIUM.)

(F. B. F.)

**Palaeontology**, like its fellow science of zoology, has reached a stage in which few startling developments are to be expected. The past year has proved no

exception to this, but has produced a considerable number of excellent and well illustrated descriptive papers which are of interest to the specialist alone. Though no group is outstanding in this respect, mention may, perhaps, be made of the many admirable studies of fossil fish.

The economic application of palaeontology is well marked in comparison with other branches of geology, but it is regarded in this case only as a means to an end, that is, as a key to historical geology. Detailed stratigraphical knowledge is necessary, in particular, to the oil geologist, who is so greatly in demand at the present time, and this knowledge must be based largely on an intimate acquaintance with the fauna of the formations in question. Thus the various oil companies have done much to foster the training of students in the study of those groups which they are most likely to meet in oil-fields. As a result of this, the Ostracods and Foraminifera have come in for a great deal of attention, especially in American universities. There is the danger, however, that in a period of economic expansion, such as is now being experienced, the purely practical side of the science may be over-stressed at the expense of the more fundamental evolutionary side, which does, indeed, sometimes tend to modify or even disprove the working rules by which the stratigrapher is guided.

Much good work has been accomplished recently in the coal-fields of Great Britain and America, where a detailed examination of both fauna and flora has not only contributed to the science, but has developed new methods of zoning which are of very definite practical value.

**BIBLIOGRAPHY.**—*Early Man as depicted by leading authorities at the International Symposium of The Academy of Natural Sciences of Philadelphia, March, 1937* (Philadelphia and New York, 1937).

(F. WAL.)

**Palestine.** Palestine lies on the western edge of Asia, being bounded on the west by the Mediterranean, on the south-west by Egypt, on the south by the gulf of Aqaba, on the east by Trans-Jordan, on the north-east by Syria, and on the north by the Lebanon. It is administered by Great Britain under a mandate from the League of Nations. The powers of the mandatory are exercised by a high commissioner resident in Jerusalem. General Sir Arthur Grenfell Wauchope, G.C.M.G., K.C.B., C.I.E., D.S.O., high commissioner since 1931, retired at the end of Feb. 1938, Sir Harold Alfred MacMichael, K.C.M.G., D.S.O., having been appointed to succeed him.

**Area, Population, and Cities.**—Palestine is about the size of Maryland, having an area of about 10,100 square miles. No census



has been taken since 1931, but the population is now estimated to be approximately 1,400,000, consisting roughly of one million Arabs and 400,000 Jews. Of the former, one in nine is a Christian, the rest are Moslems. The population has grown rapidly under the mandatory régime, owing to a falling death-rate among the Arabs and a large immigration of Jews from eastern and central Europe. Jewish immigration, which totalled 290,000 between 1919 and 1936, reached a climax in 1935 with a figure of 61,854, but has since diminished.

Jewish immigrants in first seven months of 1935: 35,637.

Jewish immigrants in first seven months of 1936: 18,610.

Jewish immigrants in first seven months of 1937: 6,760.

Until 1937, there was no limit to the entry of persons having a capital of at least £P.1,000; the remainder, apart from dependents, entered under the Labour Schedules drawn up every six months in accordance with the Government's estimate of the country's economic absorptive capacity. In July, however, the Mandatory Power announced the restriction of Jewish immigration in all categories, between Aug. 1937 and March 1938, to a total of 8,000. This was an interim measure, designed to relieve tension while a scheme of partition (*see below*) was being worked out.

English, Arabic, and Hebrew are all recognized as official languages. There are, apart from a number of private schools, two entirely distinct educational systems, the one administered directly by the Department of Education and giving instruction in Arabic, the other controlled by the Va'ad Leumi (Jewish General Council) and using the Hebrew language. The Government's expenditure on education is divided between the two systems in proportions determined by the ratio between the numbers of Arab and Jewish children of school age. These grants are inadequate to provide universal elementary education, but this is ensured, on the Jewish side, by voluntary effort.

The largest town in Palestine is Tel Aviv, with an exclusively Jewish population of 150,000. There follow Jerusalem, with 120,000, of whom 60% are Jews, and Haifa, with 100,000 and a slight Jewish majority. The only other town of considerable size is the predominantly Arab port of Jaffa, with 70,000 inhabitants.

**History.**—The resentment of the Arabs against the establishment, under the terms of the mandate, of a Jewish National Home in Palestine came to a head in 1936. A general strike began in April and continued into October. During the whole of that period there were attacks by armed Arabs on Jewish settlements, British troops, and the local police, accompanied by the destruction of Jewish crops and the sabotage of communications, and developing finally into guerilla warfare. Thirty-seven members of the defence forces and 82 Jews were killed, while not less than 1,000 Arabs lost their lives. His Majesty's Government appointed a Royal Commission, under the chairmanship of the late Earl Peel, to investigate the underlying causes of these disturbances and to make recommendations for the prevention of their recurrence. The commissioners were in Palestine from Nov. 1936 to Jan. 1937, and their report was published on July 7, 1937. They found that the underlying causes of the outbreak were the desire of the

Arabs for national independence and their fear of political domination by the Jews. Of the other Arab countries placed under "A" mandates by the peace treaties, Iraq is already a sovereign State, Syria and the Lebanon have secured a treaty which ensures their emancipation within two years, and even backward Trans-Jordan has been recognized as an "independent government." In Palestine alone no important step has yet been taken towards self-government, because any power conceded to the Arab majority would have been used to hinder the development of the Jewish National Home. Thus the clauses of the mandate which are vital to the Jews have frustrated what the Arabs regard as its essential purpose, the fostering of self-governing institutions. They feared, furthermore, that the independence which was being withheld while they were in a majority would be granted as soon as the Jews outnumbered them. They therefore demanded the cessation of Jewish immigration and the establishment of representative government. These demands could not be granted without a violation of the pledges given by Great Britain to the Jews; their refusal, on the other hand, would involve subjecting the Arabs to "a sort of creeping conquest." Having stated this dilemma, the commissioners proposed as an escape from it the partition of Palestine into two independent States. As an indication of how this might be done, but without committing themselves to its detail, they submitted the following plan: (1) a Jewish State consisting of Galilee, the Plain of Esdraelon, and the Maritime Plain as far as a point about 10 miles south of Rehovot; this would include most of the areas in which there has been a large Jewish settlement; (2) an Arab State consisting of the greater part of Palestine to the south and east of the Jewish frontier, together with Trans-Jordan; (3) a permanent British mandate over the Holy Places of Jerusalem, Bethlehem, and Nazareth, with a corridor connecting the first two with the sea. The port of Jaffa, however, was to belong to the Arab State. Treaties in accordance with the precedents of Iraq and Syria would be concluded between Great Britain on the one hand and the Jewish and Arab Governments on the other. They should contain guarantees for the protection of minorities, and for transit facilities for Arab trade through Haifa and Jewish trade with Egypt.

The Mandatory Power would retain an enclave on the Gulf of Aqaba, and temporary control of the mixed towns of Haifa, Acre, Safad, and Tiberias.

The British Government announced, simultaneously with the publication of the report, its endorsement of the principle of partition. On July 21, the House of Commons, without committing itself to that policy, authorized its submission to the League of Nations. The Peel Report was then examined at an Extraordinary Session of the Permanent Mandates Commission, from July 30 to Aug. 18. Reporting to the Council of the League, this body declared itself favourable to the preparation, by the Mandatory Power, of a definite plan involving partition, but opposed to the immediate concession of independence to the two States which would thus be created. There should be a period either of provincial autonomy under a central authority presided over by the mandatory, or two new mandates. In September the Council

BRITISH ROYAL COMMISSION for Palestine to determine means of settling intercommunal strife between Jews and Arabs. Left to right. Professor Reginald Coupland, Sir Egbert Laurie, Sir Horace Rumbold, Earl Peel, chairman





of the League authorized the British Government to work out the details of a scheme for submission to a future meeting of the Council. Speaking in the House of Commons on October 21, the colonial secretary announced that a special committee was to be appointed for this purpose; it would not, however, begin its work until order had been fully established in Palestine.

There had been a renewal of terrorist activity in February, March, and April, and after a lull in the early summer, it began again in August. On September 26, Mr. L. Y. Andrews, acting district commissioner of Galilee, was shot dead outside the Anglican church at Nazareth. The Government thereupon decided on stronger measures than had hitherto been taken. The Higher Arab Committee, the unofficial body which had assumed direction of the strike in 1936, was declared an unlawful association, and four of its members were deported to the Seychelles. Its leader, Haj Amin Effendi Al Husseini, the Mufti of Jerusalem, was deprived of his offices as President of the Moslem Supreme Council and chairman of the General Waqf Committee, the body controlling the disposition of religious funds. A fortnight later he fled from Palestine and went to Beirut.

Meanwhile, an order was published authorizing condemnation for murder on the uncorroborated evidence of a single witness. Sir Charles Tegart, formerly of the Indian police, was appointed to advise the Government on methods of dealing with terrorism. And on November 18 military courts were established throughout Palestine, with power to try persons accused of carrying or discharging firearms—either of these offences was to be punishable by death—or of causing sabotage and intimidation. The sentences of these courts are subject to confirmation by the general officer commanding the British troops in Palestine, and from his decision there is no appeal.

Despite the dispersion of the Arab leaders and the speedy infliction of the first death sentence, acts of terrorism remained as numerous as before.

Arab opposition to the idea of partition was uncompromising and unanimous. It was reiterated, after the flight of the Mufti, by Ragheb Bey Nashashibi, leader of the National Defence Party, which is generally regarded as the moderate wing of the Arab movement. Nor was this feeling confined to Palestine. The publication of the report drew immediate protests from the prime minister of Iraq and the president of the All-India Moslem League; it was the subject of official representations by the Iraqi Government at Geneva, and was condemned by the Egyptian delegate to the Assembly of the League.

On September 8, a pan-Arab Congress opened at Bloudan, in Syria, with delegates from all the Arab countries except the Yemen. Speeches were made warning Great Britain that if she continued to support Zionism, she would no longer be able to count on the friendship of the Arab peoples.

On the Jewish side opinion was less definite. All sections were opposed to the scheme suggested by the Peel commission, but to many the principle of partition was acceptable, because immigration into a Jewish State would, for a period at least, be on a more generous scale than under the mandate. At the 20th Zionist Congress, held at Zürich in August, the majority of the General Zionists and the Labour Party followed Dr. Weizmann's lead, and carried resolutions empowering the executive to ascertain the precise intentions of the British Government and lay them before a newly elected Congress.

The year closed, therefore, in an atmosphere of uncertainty, and the persistence of disorder in Palestine still prevented the Mandatory Power from appointing the committee whose work will enable it to define its intentions more clearly.

**Trade and Communications.**—Since the Balfour Declaration, the Jewish people have sunk some £P. 80 millions of capital

in Palestine, and this money, harnessed to the energy of the Jewish settlers, has transformed the country from a backward community of subsistence farmers into a versatile and prosperous economic organism.

Exports from Palestine are dominated by citrus fruits, which have accounted in recent years for over 80% of the total value. Of these the bulk are oranges, though there is an increasing production of grapefruit. The export of these crops, which is carried on from November to April, rose steadily to 7,331,000 cases in 1934–35, fell to 5,897,000 in 1935–36, and reached 10,779,000 in 1936–37. Although prices were low owing to the dumping of Spanish oranges, this record output enabled Palestine to show a substantial increase in the value of her export trade during the first eight months of 1937:

	Exports	Imports
First 8 months of 1935 . . .	£P. 3,358,000	£P. 11,597,000
First 8 months of 1936 . . .	£P. 2,393,000	£P. 8,597,000
First 8 months of 1937 . . .	£P. 4,003,000	£P. 10,622,000

As well over half the exports fall in the first quarter of the year, this table does not give an adequate impression of the adverse balance of visible trade; in 1935 it reached £P. 13,638,000 on a total foreign trade of just over £P. 22 millions. The gap between exports and imports is only partially closed by the receipts of tourist traffic, the proceeds of Zionist funds, and the import of capital by immigrants. The Peel commission recommended the opening of negotiations for the revision of article 18 of the mandate, which precludes Palestine from taking any fiscal measures which would result in discrimination against States-members of the League of Nations.

There have been important developments in communications during 1937. The Government has constructed a through road from Tel Aviv to Haifa, thus linking the two major industrial centres. And the port of Tel Aviv, established as a temporary inlet for certain classes of goods while Jaffa was incapacitated by the strike in 1936, has been granted the right to handle all classes of merchandise. Palestine is increasingly important as a centre of civil aviation. Gaza and Lydda are stopping-places respectively for Imperial Airways, Ltd. between England and Australia, and for the Royal Dutch Air Line between Holland and the East Indies. An Egyptian line uses the airport at Haifa and continues to Baghdad.

**Finance and Banking.**—The unit of currency is the Palestinian pound, at parity with sterling; it is divided into 1,000 mils. In March 1936, following a series of prosperous years, the Treasury had an accumulated surplus of £P. 6,268,000. The disturbances of April–October, however, resulted in a deficit of £P. 1,396,000 on the year ending March 31, 1937. The revenue returns for April–July 1937 showed an increase of 17% on the corresponding period of the previous year.

**Defence Forces.**—The British forces normally stationed in Palestine before the outbreak of 1936 consisted of two infantry battalions, one Royal Air Force flight, and three sections of an armoured car company. Early in 1937 there were, in addition to this garrison, six more infantry battalions and a field company of the Royal Engineers. The War Office announced at the end of July that Major-General A. P. Wavell had been appointed general officer commanding the British forces in Palestine and Trans-Jordan, in succession to Lieut.-General J. C. Dill. (See also ISLAM; MEDITERRANEAN, THE.)

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**Panamá**, a republic at the juncture of Central and South America; language, Spanish; capital, Panamá; president, Dr. Juan D. Arosemena. The area is 34,169 sq.mi., including the Canal Zone. The population by the 1930 census was 467,459, and was officially estimated as 534,631 in 1936. The chief cities (with 1930 populations) are Panamá, 82,327, and Colon, 33,460. Some popular dissatisfaction was manifested in 1937, but President Arosemena's firm stand against anti-Government agitation prevented any serious disturbance.

On Dec. 6, the Government announced the final adjustment of boundary issues with Colombia, left unsettled since 1922. Panamá has 257 miles of railways and 797kms. of highways, with 154.5 kms. under construction in 1937. Her strategic position in relation to all parts of the hemisphere make her the hub of inter-American aviation. Imports, principally foodstuffs and manufactured articles, totalled 18,989,846 balboas in 1936, with the United States supplying 51.5% and Japan 15.7%. Exports were 7,559,179 balboas, with bananas aggregating a third of the total. Demands of the Canal tourist and other traffic tend to balance exports and imports. Gold-mining is increasing in importance, with an output of 400,000 balboas in 1936. The monetary unit is the balboa (value: approx. 50¢ U.S.). The 1937-38 budget calls for 18,813,700 balboas, of which 3,417,351 balboas is for payment on the public debt. Public debt totalled 18,880,758 balboas in 1936. In 1937 there were 581 primary schools (including 509 rural), with an enrolment of 58,231, 4 secondary schools (enrolment 2,537), and a national university. Panamá has no army, but maintains a national police force of approximately 1,000. (L. W. BE.)

**Panama Canal and Canal Zone**, area, 553.8 sq.mi., of which 170.2 are water; population, June 1937, exclusive of Army and Navy personnel, 28,707, of whom 8,685 were from the United States. The length of the canal from shore line to shore line is 40.27m. Both canal and zone belong to the United States.

The Panama canal connects the Atlantic and Pacific oceans through the narrow isthmus of Panama, at approximately 9° N. lat. and 79° W. long. It was opened to traffic on August 15, 1914.

## Vessels Through Canal, Fiscal Year 1936-37

From Atlantic to Pacific	
	Cargo, tons
United States intercoastal	2,575,075
United States and Far East (including Philippine Is.)	3,508,284
Europe and South America	460,777
Europe and Canada	106,290
Europe and United States	534,749
East coast United States and west coast South America	208,218
Europe and Australasia	473,333
All other trade routes	2,028,900
<b>TOTAL</b>	<b>9,895,632</b>

From Pacific to Atlantic	
United States intercoastal	3,965,082
Far East and United States (including Philippine Is.)	1,445,704
South America and Europe	2,661,698
Canada and Europe	2,467,874
United States and Europe	1,435,003
West coast South America and east coast United States	2,359,431
Australasia and Europe	670,192
All other trade routes	3,207,759
<b>TOTAL</b>	<b>18,212,743</b>

## Traffic through the Canal for the Last Ten Fiscal Years

Fiscal year ending June 30,	Southbound (Atlantic to Pacific)		Northbound (Pacific to Atlantic)		Total		Tolls levied
	Vessels*	Cargo, tons	Vessels*	Cargo, tons	Vessels*	Cargo, tons	
1928	3,284	8,303,344	2,969	21,312,307	6,253	29,615,651	\$26,922,201
1929	3,270	9,873,529	3,010	20,774,230	6,280	30,647,768	27,111,125
1930	3,051	9,472,061	2,976	20,540,368	6,027	30,018,429	27,050,909
1931	2,717	6,670,718	2,653	18,394,505	5,370	25,065,283	24,624,600
1932	2,273	5,631,717	2,089	14,167,209	4,362	19,798,986	20,604,705
1933	2,184	4,507,070	1,978	13,054,095	4,162	18,161,165	19,601,077
1934	2,753	6,162,649	2,481	18,541,300	5,234	24,704,009	24,047,183
1935	2,676	7,529,721	2,504	17,779,806	5,180	25,309,527	23,307,003
1936	2,770	8,249,899	2,612	18,256,044	5,382	26,505,943	23,479,114
1937	2,865	9,895,632	2,522	18,212,743	5,387	28,108,375	23,102,137

\*Ocean-going commercial vessels, over 300 net tons Panama canal measurement, excluding canal vessels, Army and Navy, Panamanian Government, Colombian Army and Navy vessels.

The gross capital investment adjusted as of July 1, 1937, was \$538,160,473.

Of the total number of commercial transits during the fiscal year ended June 30, 1937, 1,670 were of United States registry, 1,385 British, 674 Norwegian, 332 German, 282 Japanese, 221 Netherlands, 189 Danish, 184 Panamanian, 108 Swedish, 100 French, and the remaining 242 of 21 other nationalities.

The origin and destination by principal trade areas of cargo in vessels passing through the Panama canal during the fiscal year ended June 30, 1937, is shown in the table in the first column. United States traffic was seriously affected from the first week of November 1936 until the middle of February 1937, by the maritime strike in the United States, and is not therefore representative of a normal year.

The principal commodities transported through the canal during the fiscal year ended June 30, 1937, segregated by direction of transit, were as follows:

### From Atlantic to Pacific

	Long tons
Manufacture of iron and steel	1,770,293
Scrap metal	1,666,030
Mineral oils	794,702
Paper and paper products	431,672
Metals, various	379,200
Phosphates	310,015
Cotton, raw	298,300
Tinplate	272,772
Sulphur	253,294

### From Pacific to Atlantic

	Long tons
Mineral oils	3,571,626
Lumber	2,748,917
Ores	1,851,254
Sugar	1,358,948
Nitrate	1,328,482
Wheat	1,218,581
Canned food products	1,092,356
Metals, various	653,250
Food products in cold storage (except fresh fruits)	304,332
Flour	259,389
Fruit, dried	233,957
Fruit, fresh (except bananas)	216,770

During the fiscal year ended June 30, 1937, tolls collections averaged \$4,288 per vessel of over 300 net tons, Panama canal measurement. From the opening of the canal to the end of June 1937, there have been 92,990 transits of such vessels. Tolls collections thereon amounted to \$406,215,948.

Tolls are levied on the net tonnages of ships. Prior to March 1, 1938, the rate for laden ships was \$1.20 per net ton, Panama canal measurement, and for ballast ships \$0.72 per net ton, with the proviso that the amount collectible shall not exceed the equivalent of \$1.25 per net ton as determined under the rules for registry in the United States, or be less than \$0.75 per net ton on the same basis. However, during 1937, legislation was passed by the U.S. Congress, which made the Panama canal rules for



measurement the sole basis for levying tolls. Effective March 1, 1938, tolls will be assessed at \$0.90 per net ton for laden vessels instead of \$1.20 and \$0.72 per net ton for ballast vessels based on new rules of measurement of the Panama canal. The principal changes in the rules are as follows: Double-bottom compartments will be exempted from gross tonnage unless available or used for cargo. Peak tanks will be deductible when used for fresh water for ship's use. An engineer's workshop not to exceed 5% of actual machinery space, or 50 tons in any case, will be deductible. Accommodations for all personnel inscribed on the ship's rolls as crew will be deductible. Spaces for use of passengers solely as public rooms will be deductible.

A concrete dam across the Chagres river at Alhajuela was completed in 1935, creating Madden lake. The entire dam is 974ft. long, 223ft. high, 191ft. wide at the base, 25ft. wide at the top, and contains about 497,000 cu.yds. of material. This lake provides reserve storage of 22 billion cubic feet of water for use in maintaining the level of Gatun lake during dry seasons. A hydroelectric plant of 20,000 KVA capacity is located beside the spillway.

In accordance with a joint resolution of Congress approved May 1, 1936, studies are being made of the possibilities of increasing the capacity of the Canal for the future needs of inter-oceanic shipping. It is not expected that the increased capacity will be needed in the near future and the studies will probably extend over several years. (C. S. Rr.)

**Pan-American Union**, an international body created by the 21 American republics for the fostering of mutual understanding and co-operation, with the essential duty of making effective the resolutions adopted by the successive Pan-American Conferences; headquarters, Washington; director, Dr. Leo S. Rowe. A governing board plans inter-American gatherings for the purpose of conferring on problems of interest to all. The Union is financed by contributions from the 21 members on the basis of population. It collects and publishes cultural, statistical, and other information of Pan-American interest.

In 1937 the Union was active in giving effect to the recommendations of the Buenos Aires Conference of 1936 in the field of economic co-operation and promotion of closer intellectual co-

operation and in extending its good offices and facilities to various conferences. It sponsored a series of cultural radio programs gave aid to a number of special conferences, including the Pan-American Educational Conference (Mexico City), the Inter-American Aviation Conference (Lima), and the Inter-American Radio Conference (Havana), and began preparations for the Eighth International Conference of American States, to be held at Lima in Dec. 1938. (L. W. BE.)

**"Panay":** see CHINESE-JAPANESE WAR: *International Aspects*, INTERNATIONAL LAW: *War in China*; UNITED STATES: *Foreign Affairs*.

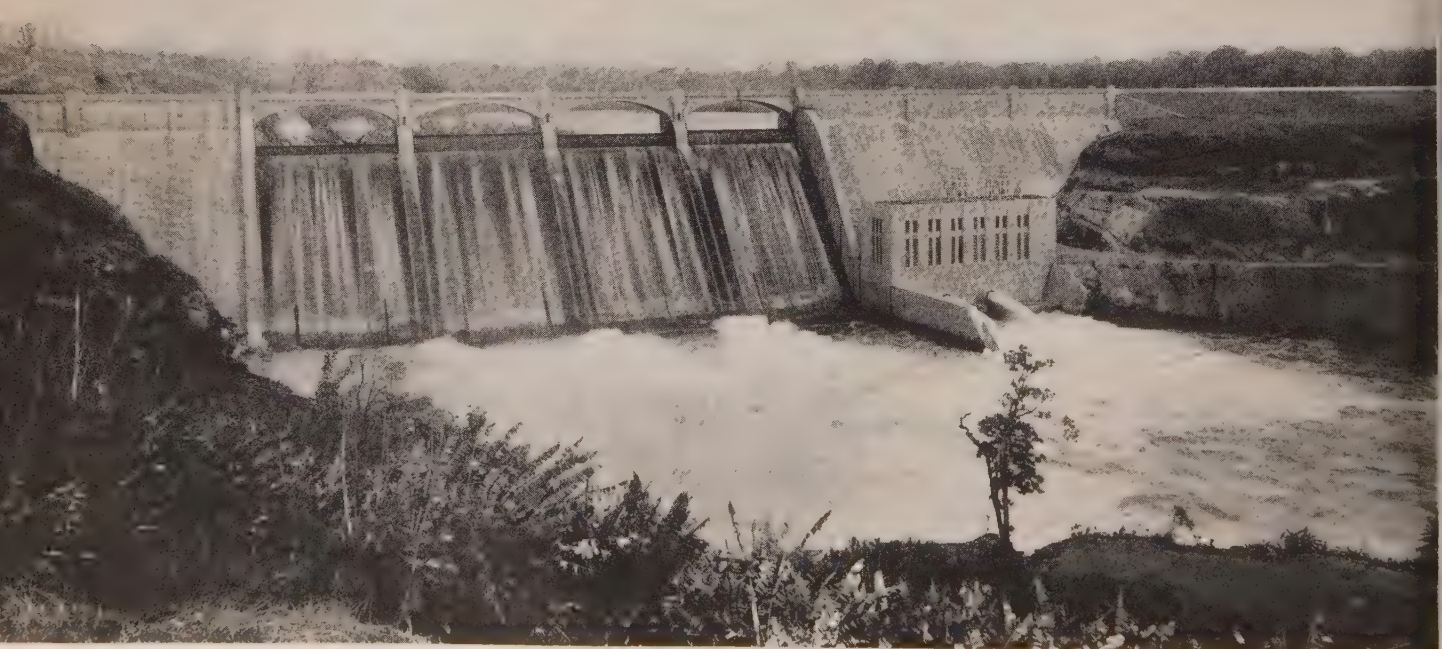
**Paper and Pulp Industry.** The paper business in the United Kingdom was excellent in 1936 and 1937. Statistics for production in 1936 (in long tons) based on raw materials used were as follows (1937 will probably be the same or slightly greater):

	Paper	Board
Bleached sulphite . . . . .	117,000	18,000
Unbleached sulphite . . . . .	555,000	25,000
Sulphate . . . . .	212,000	38,000
Mechanical . . . . .	703,000	47,000
Knotter . . . . .	3,000	17,000
Esparto . . . . .	130,000	..
Rags, etc. . . . .	50,000	..
Waste paper . . . . .	10,000	290,000
Loading, etc. . . . .	220,000	15,000
	2,000,000	450,000

Expansion of new mills through the addition of new machines was an outstanding feature of the development of the paper industry in Great Britain. From 1935 to 1937 inclusive, five companies added one or more large machines. Kraft paper production has nearly doubled in the last few years although much of it was made on machines formerly used for other grades.

In the United States the first eight months of 1937 were notable because of the boom conditions that existed. Demand far outran supply and was an important contributing factor toward the rapid expansion in production that was made. By far the great part of this expansion took place in the Southern States where about 20

CHAGRES RIVER DAM, which created Madden lake, a reservoir to maintain the water level in Gatun lake of the Panama canal





new mills were started, which when completed in 1937 and 1938 will represent a total cost of more than \$75,000,000. These mills are almost entirely designed for the manufacture of sulphate pulp, kraft wrapping paper, bags, and kraft liner board. A feature of this development was the number of new mills for the production of bleached sulphate for use in the preparation of white papers such as tissue, book and specialties. Construction on one mill at Fernandina, Fla., has been started to make sulphite pulp for rayon manufacture. Outside of the South there have been but few new mills built, but the expansion in existing mills has been very great.

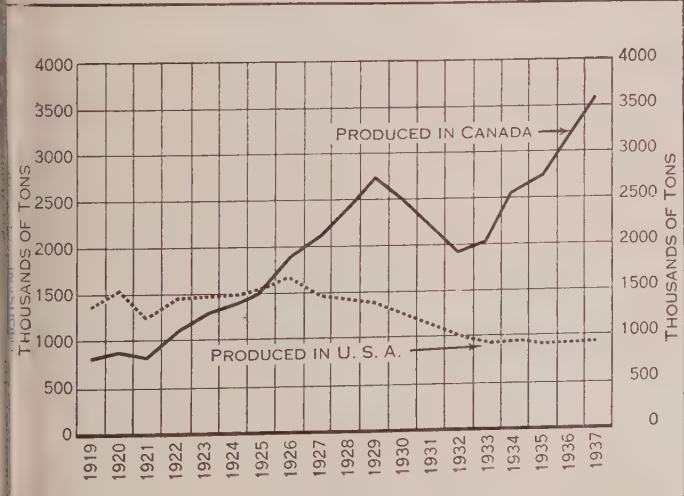
In Canada the outstanding new mill is the newsprint plant of the Ontario Paper Company at Baie Comeau, Quebec. The expenditure for pulp and paper mill, hydro-electric plant and town-site for 5,000 inhabitants will probably exceed \$30,000,000. In general, business in Canada during 1937 was unusually good. In 1937 there were about 3,646,942 tons of newsprint produced. This is the major paper production of Canada.

The pulp and paper industry in the United States in 1937 was featured by nine months of real prosperity and expansion, followed by three months of serious recession. During the early part of the year there was in fact, a shortage of raw materials, mainly pulp and a tendency on the part of distributors and consumers to buy ahead in anticipation of rising prices. In the early fall, business slowed up rapidly due to fear, and because of reduced advertising appropriations the demand for paper decreased.

There have been no outstanding technical developments in the paper industry during the past two years, although nearly all of the processes and equipment have been improved in detail. In wood pulp production it is noteworthy that pulp for rayon and chemical uses has greatly increased. In the sulphite pulp industry there has been a marked trend toward the use of forced circulation systems and special alloys for pipes and valves. In paper making, an increased use of fillers to obtain greater opacity of printing papers is observed. In the sulphate pulp industry more attention is being paid to the development of new by-products.

Because of the importance of newsprint as a measure of the world's cultural development, it is of interest to note the annual pounds per capita consumption in several countries: United States 57; United Kingdom 55; New Zealand 55; Australia 53; Canada 44; Denmark 30; Sweden 27; Argentina 26; Netherlands 23; Belgium 21; Switzerland 21; Norway 20; France 18; Japan 13; Finland 13; Germany 11; Austria 9; Czechoslovakia 5; Greece 4; Italy 3; Mexico 3; Poland 2; Russia 2; Yugoslavia 1.

(R. G. M.)



PRODUCTION OF NEWSPRINT in the United States and in Canada. Compiled by Newsprint Service Bureau, New York city

Estimated United States Paper Production for 1937  
(In Tons)

	Census 1936	Estimate 1937
Newsprint . . . . .	938,287	966,436
Printing Papers . . . . .	1,636,837	1,781,700
Cover and Writing . . . . .	627,853	646,051
Wrapping Papers . . . . .	1,879,323	2,067,255
Paperboards . . . . .	5,454,637	5,727,369
Tissue and other . . . . .	1,438,615	1,582,477
Total . . . . .	11,975,552	12,771,288

Papua: see NEW GUINEA.

**Paraguay**, an inland republic in Southern South America; language, Spanish; capital, Asunción; provisional president, Felix Paiva. The area, including the Chaco region (approx. 100,000 sq.mi.) disputed with Bolivia, is 173,700 square miles. Population (estimated, 1935) 913,000. The chief cities are: Asunción, 90,000; Villa Rica, 30,000; Villa Concepcion, 25,000.

**History.**—Paraguay is nominally governed by a president and congress under the Constitution of 1870, but the constitution has been suspended, except at brief intervals, for several years. Internal developments in 1937 were essentially the outgrowth of the economic and social conditions resulting from the termination of the Chaco War with Bolivia, and were featured by political instability and revolutionary activity. On March 11, in furtherance of his totalitarian program, Colonel Rafael Franco, provisional president since 1935, placed all industries under Government control, a move bitterly opposed by foreign, especially Argentine, interests in the country. In August, when, in accord with the Chaco peace protocol, Franco ordered the withdrawal of troops from the Chaco, the army refused. On Aug. 13, the cabinet was forced to resign, and, on Aug. 15, President Franco was forced out of office and exiled by a junta which named as provisional president, Dr. Felix Paiva, dean of the faculty of law at the National university and former vice-president. President Paiva restored the constitution and promised early elections, but on Sept. 7, his régime was threatened by an abortive revolt whose objective was the restoration of Franco. After several days of uncertainty the revolt was quelled, and President Paiva assumed dictatorial powers, suspended the constitution, and proclaimed martial law.

On Nov. 8, martial law was lifted, after the suppression of a new Franco revolt. For the most part, Paraguayan foreign relations in 1937 were in connection with the negotiations for a definite settlement of the Chaco dispute with Bolivia (*see* CHACO); but with political instability in both countries, little positive achievement was registered.

In February Paraguay completed her formal withdrawal from the League of Nations.

A tripartite trade agreement was made with Argentina and Bolivia in the same month.

**Trade and Communications.**—External communication is primarily by way of the Paraná river, where regular steamship service is maintained, and by railway and regular air service to Argentina. Paraguay has 264mi. of railroads. Imports (chiefly foodstuffs, textiles, and machinery) in 1935 totalled 11,630,390 gold pesos, with Argentina supplying 50.5% and Japan 14.5%. Exports were valued at 11,396,050 gold pesos, with 31% destined for Argentina, and 55% additional for reshipment from Argentina. Principal export commodities are cotton, quebracho extract, lumber, and hides. Cotton, maté (Paraguay tea), quebracho, lumber-



ing, and cattle are the principal industries. The monetary units are the paper peso and gold peso, both based on Argentine currency. (Value: approx. 1.6¢ and 67¢ U.S.) The national budget for 1937 was \$2,232,939.30. Paraguay has approximately 740 elementary and secondary schools (enrolment about 100,000) and one university. Military service is obligatory. The peacetime army comprises 5,250. (L. W. BE.)

**Parapsychology:** *see* PSYCHICAL RESEARCH; PSYCHOLOGY.

## Parent-Teacher Association, The.

This organization is devoted to child welfare through home and school co-operation and parent education. In the United States there are more than 26,000 of these local associations united under the name of the National Congress of Parents and Teachers with a membership of more than two million. Of this there are branches in all States but one, in Hawaii, in Alaska and in the District of Columbia. Founded in 1897, by Mrs. Theodore W. Birney and Mrs. Phoebe Apperson Hearst, as the Congress of Mothers, it now embraces fathers, mothers, teachers and other interested citizens, while the name has been changed, also, to include them. It maintains headquarters in Washington, D.C., where it was organized. Its authority lies in its Federal charter and its annual convention.

The Parent-Teacher Association is no longer regarded simply as a school auxiliary for supplying material benefits for the school, although they have done this in large measure; its function is now generally conceded to be to create public opinion in favour of better homes, better schools and better communities and to encourage co-operation between home and school. To stimulate its successful functioning there are carefully outlined studies by national and State committees to acquaint the members with physical, mental and emotional conditions of children and how to meet their needs. The Congress of Parents and Teachers publishes an official organ, the *National Parent-Teacher*, a monthly magazine furnishing authoritative information on the rearing and education of children. It publishes, also, many pamphlets and leaflets on these general subjects.

In 1926, the Congress was instrumental in establishing the International Federation of Home and School, the headquarters of which are now in London. There are affiliated in this federation, organizations for home and school co-operation in 27 countries under a variety of names. The International Federation publishes a quarterly magazine called *Home and School* and holds a biennial convention, the latest being in 1937, at Paris. The same general principles and objects motivate the home and school movement wherever it may be found. (M. L. L.)

## Parents and Teachers, National Congress of.

Mrs. J. K. Pettengill of Detroit, Michigan, was elected president of the National Congress of Parents and Teachers at the annual convention in Richmond, Virginia, succeeding Mrs. B. F. Langworthy of Winnetka, Illinois. Activities on the program prepared for 1938 include support for revision of the U.S. Foods and Drug Act, emergency Federal aid for education, abolishing compulsory block-booking and blind selling of cinema films, establishing a Federal Department of Education. Projects supported by the national organization are first endorsed by at least 26 of the 48 State associations of parents and teachers. The national organization now has more than 2,000,000 members, most of whom are parents of children attending public schools. The local associations of parents and teachers number more than 26,000. The national association co-operates

## PARAPSYCHOLOGY—PARIS

in its work with the International Federation of Home and School in England and with similar organizations in 27 other countries. National offices of the congress of parents and teachers are at 1201 16th St., N.W., Washington, D.C.

**Paris.** The life and outward aspect of Paris in 1937 was dominated by preparation for the International Exhibition, and, from the end of May, by the exhibition itself. Nevertheless, the opening of the exhibition, which was to have taken place at the beginning of May, was delayed as a result of the application of social legislation, and thus the number of visitors was fewer than had been hoped—over 31,000,000, as against over 35,000,000 for the Colonial Exhibition. General unrest and monetary difficulties also deterred many foreigners. Still, throughout the summer the influx of visitors restored to Paris its former gaiety and animation. The illuminations of the exhibition and the displays organized by the Comité des Fêtes enjoyed a great success.

The exhibition pavilions lined the two banks of the Seine below the Pont Alexandre III. Although the exhibition is not to be continued in 1938, the architectural patrimony of Paris will be enriched by the new Palais de Chaillot (formerly the Trocadero) and by the two magnificent palaces on the Quai de Tokio, the one national, the other municipal, destined for exhibitions of contemporary art. Further, the Pont d'Iéna has been widened, and the old national warehouses on the Quai d'Orsay demolished.

Considerable works of town improvement have been undertaken both in the city and in the suburbs. The population of Paris in the last census was, in round numbers, 2,871,000, and that of the suburbs 2,042,000 or nearly 5,000,000 for the 118,600 ac. of the Seine department. To this should be added parts of the departments of Seine-et-Oise, Seine-et-Marne, and Oise. The population has spread into the suburbs in recent years, but the increased cost of transport tends to bring people back into the city. The laying-out of the site of the old fortifications has been accomplished, and the front is now a vast circle of gardens, sports grounds, and open spaces. The demolition of 17 blocks of insanitary houses is being undertaken; this will mean the destruction of 4,000 dwellings and the transfer of 200,000 persons. On the site of the first block, huge market halls are being constructed to enlarge the Halles Centrales.

Apart from these large and exacting projects, the principal works realized in 1937 have been a continuation of the great circular road planned to include the old military boulevards, which is becoming a much-used channel of communication. Wide underground passages are being constructed under this road at the busiest crossings; at the Portes de Champerret, de Clichy, d'Italie, de la Villette, Maillot, and Dauphine. The Pont National and the Pont d'Auteuil have been widened. This big circular road should relieve congestion in the heart of Paris. Three new metro lines have been opened, and others prolonged into the suburbs (Neuilly, Montreuil, Sevres, Levallois, Issy). The Sceaux-Massy-Palaiseau railway has been taken over by the Metropolitan Company. In 1937, the first stage was realized in a big scheme for regulating the lines leaving the centre of Paris and radiating out towards the outskirts; the scheme should see completion in three years.

These results are the more remarkable, but also the more costly, in that Paris has had to bear heavy charges in the application of new social legislation; the effect of monetary devaluation must also be remembered. If the total budget figure for 1937 surpassed that of 1936 by 167,000,000, that of 1938 will increase it by 614,000,000. The proportions of the main items of expenditure remain much the same: personnel 40%, debts 25%, police and service 23%, upkeep 12%. The heavy charge for unemployment is covered by the issue of short-term bonds, which, from



time to time, are consolidated by a long-term loan, of which the budget only needs to carry the annual payments. But the debt already amounts to more than 17 milliards.

(R. PIN.)

**Paris Exposition:** see ARCHITECTURE: *Paris Exposition*; FAIRS AND EXHIBITIONS; PARIS.

**Parker Dam:** see DAMS.

**Parks and Monuments:** see NATIONAL PARKS AND MONUMENTS.

**Parliament, Houses of.** The British Houses of Parliament are composed as follows:

## House of Commons:

(C. = Conservative; Com. = Communist; I.L.P. = Independent Labour Party; Ind. = Independent; L. = Liberal; L. Nat. = Liberal Nationalist; Lab. = Labour; N. Lab. = National Labour; Nat. = Nationalist; N. Abst. = National Abstentionist.)

Constituency	Member	Party	Constituency	Member	Party	Constituency	Member	Party
Aberdeen, North . . .	G. M. Garro-Jones . . .	Lab.	Caernarvon	Elwyn Jones	Lab.	Durham (cont.)	Dr. Hugh Dalton . . .	Lab.
" South . . .	Sir J. D. W. Thomson, Bt.	C.	Caernarvon District	David Lloyd George	Ind. L.	Bishop Auckland . . .	W. Whiteley . . .	Lab.
Aberdeen & Kincardine Central	Sir R. W. Smith . . .	C.	Caithness & Sutherland	Sir A. H. M. Sinclair, Bt.	L.	Blaydon . . .	John L. Lawson . . .	Lab.
Eastern	R. J. G. Boothby . . .	C.	Camberwell, Dulwich	Bracewell Smith . . .	C.	Chester-le-Street . . .	David Adams . . .	Lab.
Kincardine & Western	Sir C. M. Barclay-Harvey . . .	C.	" North	C. G. Ammon . . .	Lab.	Consett . . .	J. Ritson . . .	Lab.
Accrington . . .	Maj. H. A. Procter . . .	C.	" North-west	Maj. O. M. Guest . . .	C.	Durham . . .	W. J. Stewart . . .	Lab.
Anglesey . . .	Megan Lloyd George . . .	Ind. L.	Peckham . . .	L. Silkin . . .	Lab.	Houghton-le-Spring	Ellen Wilkinson . . .	Lab.
Angus . . .	Capt. W. T. Shaw . . .	C.	Cambridge	Lt.-Com. R. L. Tuftnell	C.	Jarrow . . .	E. Shinwell . . .	Lab.
Antrim (2) . . .	Sir Hugh O'Neill, Bt.	C.	Cambridgeshire	Capt. R. G. Briscoe . . .	C.	Seaham . . .	J. R. Leslie . . .	Lab.
"	Sir Joseph M'Connell, Bt.	C.	Cambridge University (2)	Sir John James Withers	C.	Sedgefield . . .	J. Batey . . .	Lab.
Argyll . . .	F. A. Macquisten, K.C.	C.	Cardiff, Central . . .	K. W. M. Pickthorn	N. Lab.	Spennymoor . . .	Sir F. B. Sanderson	C.
Armagh . . .	Sir W. J. Allen . . .	C.	" East . . .	Sir E. N. Bennett . . .	C.	Ealing . . .	Lt.-Col. J. Mayhew	C.
Ashton-under-Lyne . . .	F. B. Simpson . . .	Lab.	" South . . .	O. T. Morris . . .	C.	East Ham, North	A. J. Barnes . . .	Lab.
Ayr and Bute	Sir C. G. MacAndrew	C.	Cardigan . . .	Capt. Arthur Evans . . .	C.	" South . . .	R. A. Cary . . .	C.
Bute and Northern	Kenneth Lindsay . . .	N. Lab.	Carlisle . . .	D. Owen Evans . . .	L.	Eccles . . .	J. C. Morrison Guy	C.
Kilmarnock . . .	Rt. Hon. James Brown	Lab.	Carmarthen	Brig.-Gen. E. L. Spears	C.	Edinburgh Central	F. W. Pethick-Lawrence	Lab.
South Ayrshire . . .	Sir T. C. Russell Moore	Lab.	Cheltenham	Maj. D. Hopkins . . .	Lab.	" East . . .	A. G. Erskine Hill	C.
Ayr District . . .	Sir J. E. Findlay, Bt.	C.	Cheshire	Sir Samuel Hoare . . .	Lab.	" North . . .	Sir Samuel Chapman	C.
Banff . . .	J. Potts . . .	Lab.	City of Chester	D. L. Lipson . . .	Ind. C.	" South . . .	T. M. Cooper . . .	C.
Barnsley . . .	Sir J. Walker-Smith	C.	Crewe . . .	Sir E. W. M. Grigg . . .	C.	" West . . .	F. A. Broad . . .	Lab.
Barrow-in-Furness	T. L. E. B. Guinness	C.	Eddisbury . . .	Sir C. Cayzer, Bt.	C.	Edmonton . . .	Capt. J. R. J. Macnamara	C.
Bath . . .	W. Brooke . . .	Lab.	Knutsford . . .	Sir Donald B. Somervell	C.	Essex, Chelmsford	Oswald Lewis . . .	C.
Batley and Morley	W. S. Sanders . . .	Lab.	Macclesfield . . .	R. J. Russell . . .	L. Nat.	" Colchester . . .	W. S. Churchill . . .	C.
Battersea, North	H. R. Selley . . .	C.	Northwich . . .	Brig.-Gen. E. Makins	C.	" Harwich . . .	J. S. Holmes . . .	L. Nat.
" South . . .	S. R. Wells . . .	C.	Stalybridge and Hyde	J. R. Renner . . .	C.	" Malden . . .	Col. Sir E. A. Ruggles-Brise, Bt.	C.
Bedfordshire Bedford	E. Leslie Burgin . . .	L. Nat.	Wirral . . .	Lord Colum Crichton-Stuart	C.	" Romford . . .	H. J. Parker . . .	Lab.
" Luton . . .	A. T. Lennox-Boyd	C.	City of London (2)	T. Cox . . .	C.	" Saffron Walden . . .	R. A. Butler . . .	C.
Belfast, East . . .	Capt. H. Dixon . . .	C.	Combined English Universities (2)	Capt. A. C. Graham	C.	" South-eastern . . .	H. V. A. M. Raikes . . .	C.
" North . . .	Thomas Somerset	C.	"	Sir V. Bowater, Bt.	C.	Exeter . . .	A. C. Reed . . .	N. Abst.
" South . . .	W. J. Stewart . . .	C.	"	Sir A. G. Anderson . . .	C.	Fermanagh & Tyrone (2)	P. Cunningham . . .	N. Abst.
" West . . .	A. C. Browne . . .	C.	"	"	"	Fife, Eastern . . .	A. J. Mulvey . . .	L. Nat.
Berkshire, Abingdon	Sir R. R. G. Glynn	C.	"	"	"	" Western . . .	J. H. Stewart . . .	Com.
" Newbury . . .	Brig.-Gen. H. Clifton Brown	C.	"	"	"	Finbury . . .	Rev. G. S. Woods	Lab.
" Windsor . . .	A. A. Somerville . . .	C.	"	"	"	Flint . . .	G. Rowlands . . .	C.
Bermundsey	Ben Smith . . .	Lab.	Cornwall	J. R. Rathbone . . .	C.	Fulham, East	Hon. W. W. Astor . . .	C.
Rotherhithe . . .	Dr. A. Salter . . .	Lab.	Bodmin . . .	Lt.-Com. P. G. Agnew	C.	" West . . .	Sir Cyril S. Cobb . . .	C.
Berwick & Haddington	J. H. F. McEwen . . .	C.	Cambridge	Sir F. D. Acland, Bt.	L.	Galloway . . .	J. H. McKie . . .	C.
Bethnal Green	D. Chater . . .	Lab.	Northern	M. Petherick . . .	C.	Gateshead . . .	T. Magnay . . .	L. Nat.
North-east . . .	Sir P. A. Harris, Bt.	L.	Penryn and Falmouth	A. L. Beechman . . .	C.	Glamorgan	W. G. Cove . . .	Lab.
South-west . . .	L. Graham White . . .	L.	St. Ives . . .	Capt. W. F. Strickland	C.	Aberavon	Morgan Jones . . .	Lab.
Sirkenhead, East . . .	Lt.-Col. J. S. Allen . . .	C.	Coventry	Lt.-Col. G. K. M. Mason	C.	Caeaphilly . . .	P. R. Grenfell . . .	Lab.
" West . . .	"	"	Croydon, North	H. G. Williams . . .	C.	Gower . . .	P. M. Munro . . .	C.
Birmingham	Capt. Hon. A. O. J. Hope	C.	" South . . .	"	"	Ilkley and Barry	Sir W. Jenkins . . .	Lab.
Aston . . .	J. S. Croke . . .	C.	Cumberland	W. H. W. Roberts . . .	L.	Neath . . .	E. J. Williams . . .	Lab.
Deritend . . .	O. E. Simmonds . . .	C.	Northern	Capt. A. V. G. Dower	C.	Ogmore . . .	James Maxton . . .	I.L.P.
Duddeston . . .	Neville Chamberlain . . .	C.	Penrith & Cockermouth	Frank Anderson . . .	Lab.	Glasgow, Bridgeton	Rev. Campbell Stephen	I.L.P.
Edgbaston . . .	Squadron-Ldr. J. A. C. Wright	C.	Whitehaven	Tom Cape . . .	Lab.	" Camlachie . . .	Sir John Train . . .	C.
Erdington . . .	Com. O. Locker-Lampson	C.	Workington . . .	C. U. Peat . . .	L. Nat.	" Central . . .	Sir W. Alexander . . .	C.
Handsworth . . .	J. R. H. Cartland . . .	C.	Darlington . . .	R. Richards . . .	Lab.	" Gorbals . . .	G. Buchanan . . .	I.L.P.
King's Norton . . .	G. W. Lloyd . . .	C.	Denbigh, Denbigh	W. H. Green . . .	Lab.	" Govan . . .	Neil Maclean . . .	Lab.
Ladywood . . .	Sir P. J. H. Hannon . . .	C.	Wrexham . . .	W. A. Reid . . .	C.	" Hillhead . . .	J. S. C. Reid . . .	C.
Moseley . . .	Lt.-Col. L. C. S. Amery	C.	Derby (2) . . .	P. J. Noel-Baker . . .	Lab.	" Kelvingrove . . .	W. E. Elliot . . .	C.
Sparkbrook . . .	W. F. Higgs . . .	C.	Derbyshire	Herbert Wragg . . .	C.	" Maryhill . . .	J. J. Davidson . . .	Lab.
West . . .	E. W. Salt . . .	C.	Belper . . .	George Benson . . .	Lab.	" Partick . . .	A. S. L. Young . . .	C.
Yardley . . .	Capt. G. S. Elliston	C.	Chesterfield . . .	G. Ridley . . .	Lab.	" Pollok . . .	Lt.-Col. Sir John Gilmour . . .	C.
Blackburn (2) . . .	Lt.-Col. Sir W. D. Smiles	C.	Clay Cross . . .	Sir Alfred Law . . .	Lab.	" St. Rollox . . .	William Leonard . . .	Lab.
Blackpool . . .	J. R. Robinson . . .	C.	High Peak . . .	G. H. Olliver . . .	Lab.	" Springburn	J. McGovern . . .	I.L.P.
Boiton (2) . . .	Maj. Sir C. F. Entwistle	C.	Ilkley . . .	Frank Lee . . .	Lab.	" Tradeson . . .	Mrs. G. D. Hardie . . .	Lab.
Bootle . . .	Sir John Haslam . . .	C.	North-eastern	P. V. Emrys-Evans	C.	Gloucester . . .	H. Leslie Boyce . . .	C.
Bournemouth . . .	Sir H. Page-Croft . . .	C.	Southern	Marquess of Hartington	C.	Gloucestershire	W. S. Morrison . . .	C.
Bradford, Central	W. Leach . . .	Lab.	Western	"	"	Cirencester & Tewkesbury	M. P. Price . . .	Lab.
" East . . .	J. Hepworth . . .	C.	Devonshire	"	"	Forest of Dean	W. R. D. Perkins . . .	C.
" North . . .	Sir E. J. S. H. Ramsden	C.	Barnstaple . . .	"	"	Stroud . . .	D. W. Gunston . . .	C.
" South . . .	H. Holdsworth . . .	L.	Honiton . . .	"	"	Thornbury . . .	Arthur Harbord . . .	L. Nat.
Brecon and Radnor	Hon. Ivor Guest . . .	Nat.	South Molton . . .	"	"	Great Yarmouth	R. Gibson . . .	Lab.
Brighton (2) . . .	Maj. G. C. Tryon . . .	C.	Tavistock . . .	"	"	Greenock . . .	Sir George Hume . . .	C.
"	Sir Cooper Rawson . . .	C.	Tiverton . . .	"	"	Greenwich . . .	Sir W. J. Womersley	Lab.
Bristol, Central	Lord Apsley . . .	Lab.	"	"	"	Grimby . . .	F. C. Watkins . . .	Lab.
" East . . .	Sir S. Cripps . . .	Lab.	"	"	"	Hackney, Central	Capt. A. U. M. Hudson	C.
" North . . .	R. H. Bernays . . .	L.	"	"	"	" North	Herbert Morrison . . .	Lab.
" South . . .	A. G. Walkden . . .	Lab.	"	"	"	" South	Gilbert Gledhill . . .	C.
" West . . .	C. T. Culverwell . . .	C.	"	"	"	Halifax . . .	D. N. Pritt . . .	Lab.
Bromley . . .	Sir E. T. Campbell . . .	C.	"	"	"	Hammersmith, North	J. D. Cooke . . .	C.
Buckinghamshire	M. W. Beaumont . . .	C.	"	"	"	" South . . .	"	"
Aylesbury . . .	Maj. J. P. Whiteley . . .	C.	Dudley . . .	D. J. B. Joel . . .	C.	Hampshire	Viscount Wolmer . . .	C.
Buckingham . . .	Sir A. W. F. Knox . . .	C.	Dumbarton	T. Cassels . . .	Lab.	Aldershot . . .	P. W. Donner . . .	C.
Wycombe . . .	W. A. Burke . . .	Lab.	Dumbarton District	D. Kirkwood . . .	Lab.	Basingstoke . . .	Sir T. W. H. Inskip . . .	C.
Burnley . . .	A. E. L. Chorlton . . .	C.	Dumfries . . .	Sir Henry Fildes . . .	L. Nat.	Fareham . . .	"	"
Bury . . .	"	"	Dundee (2) . . .	Florence Horsburgh	C.	New Forest and Christchurch	Maj. J. D. Mills . . .	C.
"	"	"	Dunfermline District	D. M. Foot . . .	L.	Petersfield . . .	Maj. Sir R. H. Dorman-Smith	C.
"	"	"	Durham	W. McL. Watson . . .	Lab.	Winchester . . .	G. E. H. Palmer . . .	C.
"	"	"	Barnard Castle . . .	T. M. Sexton . . .	Lab.	"	"	"



Constituency	Member	Party	Constituency	Member	Party	Constituency	Member	Party
Hampstead	George Balfour	C.	Lincolnshire (cont.)	H. G. Butcher	L. Nat.	Paisley	J. P. MacLay	L.
Hartlepool, The	W. G. Howard Gritten	C.	Holland with Boston	Henry C. Haslam	C.	Pembroke	Maj. G. Lloyd George	Ind. L.
Hastings	M. R. Hely-Hutchinson	C.	Horncastle	Lt.-Col. A. P. Henage	C.	Perth and Kinross	Duchess of Atholl	C.
Hereford, Hereford	J. P. L. Thomas	C.	Louth	Lord Willoughby de	C.	Kinross and Western	T. Hunter	C.
Hereford, Leominster	Sir E. W. Shepperson	C.	Rutland and Stamford	Eresby	C.	Plymouth, Devonport	Maj. L. Hore-Belisha	L. Nat.
Hertford	The Viscountess David-son	C.	Linlithgow	G. Mathers	Lab.	" Drake	Lt.-Col. C. H. C. Guest	C.
Hemel Hempstead	Sir Murray F. Sueter	C.	Liverpool, East Toxteth	P. G. T. Buchan-Hepburn	C.	" Sulton	Viscountess Astor	C.
Hertford	Sir A. T. Wilson	C.	" Edgehill	A. Critchley	C.	Poplar, Bow & Bromley	George Lansbury	Lab.
Hitchin	Sir F. E. Fremantle	C.	" Evertton	B. V. Kirby	Lab.	" South	D. M. Adams	Lab.
St. Albans	Sir Dennis Herbert	C.	" Exchange	Sir J. J. Shute	C.	Portsmouth, Central	R. E. B. Beaumont	C.
Watford	Sir R. I. Tasker	C.	" Fairfield	Sir C. E. R. Brocklebank	C.	" North	Sir Roger Keyes	C.
Holborn	Capt. D. Euan Wallace	C.	" Kirkdale	Sir R. Rankin	C.	" South	Sir H. R. Cayzer, Bt.	C.
Hornsey	W. Mabane	L. Nat.	" Scotland	D. G. Logan	Lab.	Preston (2)	A. C. Moreing	C.
Huddersfield	Dr. S. J. Peters	L. Nat.	" Wallon	R. Purbrick	C.		Capt. E. C. Cobb	C.
Huntingdonshire	Sir P. Sassoon	C.	" Waverley	Maj. P. S. Shaw	C.	Queen's University, Belfast	Col. T. Sinclair	C.
Hythe	G. Hutchinson	C.	" West Derby	D. P. M. Fyfe	C.	Reading	Dr. A. B. Howitt	C.
Ilford			" West Toxteth	J. Gibbins	Lab.	Renfrew, Eastern	Marquess of Clydesdale	C.
Inverness and Ross and Cromarty	Sir M. Macdonald	L. Nat.	London	Sir Ronald Ross	C.	" Western	H. J. Scrymgeour-Wedderburn	C.
Inverness	Malcolm Macdonald	N. Lab.	London University	Sir E. G. Graham-Little	Ind. C.	Rhondda, East	W. H. Mainwaring	Lab.
Ross and Cromarty	M. K. Macmillan	Lab.	Manchester, Ardwick	Joseph Henderson	Lab.	" West	Will John	Lab.
Western Isles	Sir John Ganzoni, Bt.	C.	" Blackley	J. Lees-Jones	Lab.	Richmond (Surrey)	Maj. G. S. Harvie-Watt	C.
Ipswich	James A. E. de Rothschild	L.	" Clayton	J. H. Jagger	C.	Rochdale	W. T. Kelly	Lab.
Isle of Ely	Capt. P. D. Macdonald	C.	" Exchange	P. T. Eckerley	Lab.	Rochester, Chatham	Capt. L. F. Plugge	C.
Isle of Wight	Thelma Cazalet	C.	" Gorton	Capt. W. W. Benn	Lab.	" Gillingham	Sir Robert Gower	C.
Islington, East	Dr. L. Haden Guest	Lab.	" Hulme	Sir J. Nall	C.	Rossendale	R. H. Cross	C.
" North	W. S. Cluse	Lab.	" Moss Side	W. R. Duckworth	Lab.	Rotherham	W. Dobbie	Lab.
" South	F. Montague	Lab.	" Platting	J. R. Clynes	Lab.	Roxburgh and Selkirk	Lord William Montagu-Douglas-Scott	C.
" West			" Rusholme	E. A. Radford	C.		W. A. Robinson	Lab.
			" Withington	E. L. Fleming	C.	St. Helens	Capt. A. S. Cunningham-Reid	C.
Kensington, North	J. A. L. Duncan	C.	Merioneth	Sir H. Haydn Jones	L.	St. Marylebone	R. Grant-Ferris	C.
South	Sir W. H. Davison	C.	Merthyr Tydfil	G. H. Hall	Lab.	St. Pancras, North	Sir A. L. Beit	C.
Kent, Ashford	W. P. Spens	C.	Aberdare	S. O. Davies	Lab.	" South-east	Sir G. G. Mitcheson	C.
" Canterbury	Sir W. Wayland	C.	Merthyr	A. Edwards	Lab.	" South-west	J. P. Morris	C.
" Chislehurst	Sir Waldron Smithers	C.	Middlesbrough, East	F. Kingsley Griffith	L.	Salford, North	J. J. Stourton	C.
" Dartford	F. E. Clarke	C.	" West			" South	J. F. Emery	C.
" Dover	Maj. Hon. J. Astor	C.	Middlesex	H. J. Duggan	C.	" West	Lt.-Col. G. Windsor-Clive	C.
" Faversham	Adm. Maitland	C.	Acton	H. P. Mitchell	C.	Salop, Ludlow	Maj. B. E. P. Leighton	C.
" Gravesend	Sir Irving J. Albery	C.	Brentford & Chiswick	B. Bull	C.	" Oswestry	G. A. V. Duckworth	C.
" Isle of Thanet	Capt. H. H. Balfour	C.	Enfield	J. F. E. Crowder	C.	" Shrewsbury	Col. J. Baldwin-Webb	C.
" Maidstone	Alfred C. Bossom	C.	Finchley	Sir I. Salmon	C.	" The Wrekin	J. Graham Kerr	C.
" Sevenoaks	Col. Charles Ponsonby	C.	Harrow	Sir Reginald Blair	C.	Scottish Universities (3)	Dr. G. A. Morrison	L.
" Tonbridge	Sir A. W. Maxwell Bailie	C.	Hendon	Sir Reginald Blaker	C.		(One seat vacant)	
Kingston-upon-Hull			Spethorne	E. H. Keeling	C.	Sheffield, Attercliffe	C. H. Wilson	Lab.
Central	W. Windsor	Lab.	Twickenham	Col. J. J. Llewellyn	C.	" Brightside	F. Marshall	Lab.
East	G. Muir	Lab.	Uxbridge	A. Beverley Baxter	C.	" Central	W. W. Boulton	C.
North-west	Sir A. Lambert Ward, Bt.	C.	Wood Green			" Ecclesall	Sir Geoffrey Ellis	C.
South-west	Richard K. Law	C.	Midlothian and Peebles			" Hallam	L. W. Smith	C.
Kingston-upon-Thames	Adm. P. M. R. Royds	C.	Northern			" Hillsborough	A. V. Alexander	Lab.
Kirkcaldy District	Tom Kennedy	Lab.	Peebles and Southern	Lt.-Col. David John Colville	C.	" Park	G. Lathan	Lab.
Lambeth, Brixton	N. C. Colman	C.	Monmouth, Aberlillery	Capt. A. H. M. Ramsay	C.	Shoreditch	E. Thurtle	Lab.
" Kennington	Sir George Harvey	Lab.	" Bedwellty	George Daggar	Lab.	Smethwick	A. R. Wise	C.
" North	G. R. Strauss	Lab.	" Ebbw Vale	Sir Charles Edwards	Lab.	Somerset		
" Norwood	D. Sanders	C.	" Monmouth	Aneurin Bevan	Lab.	Bridgwater	R. P. Croom-Johnson	C.
Lanark, Bothwell	I. C. Welsh	Lab.	" Pontypool	Maj. A. J. Herbert	Lab.	Frome	Mrs. H. B. Tate	C.
" Coatbridge	Rev. J. Barr	Lab.	Montgomery	A. Jenkins	Lab.	Taunton	Lt.-Col. E. T. R. Wickham	C.
" Hamilton	Duncan Graham	Lab.	Montrose District	E. C. Davies	L. Nat.	Wells	Lt.-Col. A. J. Muirhead	C.
" Lanark	Lord Dunglass	C.		Lt.-Col. Charles Iain Kerr	L. Nat.	Weston-super-Mare	I. L. Orr-Ewing	C.
" Motherwell	J. Walker	Lab.	Moray and Nairn	Hon. James Stuart	C.	Yeovil	Sir G. F. Davies	C.
" Northern	W. J. Anstruther-Gray	Lab.	Morpeth	R. J. Taylor	Lab.	Southampton (2)	W. Craven-Ellis	C.
" Rutherglen	A. Chapman	C.	Nelson and Colne	S. S. Silverman	Lab.		Sir Charles Barrie	L. Nat.
Lancashire			Newcastle-under-Lyme	Col. J. C. Wedgwood	Lab.	Southend-on-Sea	H. Channon	C.
Chorley	D. H. Hacking	C.	Newcastle-upon-Tyne			Southport	R. S. Hudson	C.
Clitheroe	Capt. Sir W. Brass	C.	Central	A. Denville	C.	South Shields	J. Chuter Ede	Lab.
Darwen	S. H. M. Russell	C.	East	Sir R. W. Aske	L. Nat.	Southwark, Central	Harry Day	Lab.
Fylde	Lord Stanley	C.	North	Sir N. Grattan-Doyle	C.	" North	E. A. Strauss	L. Nat.
Heywood & Radcliffe	R. W. Porritt	C.	West	Dr. J. W. Leech	C.	" South-east	T. E. Naylor	Lab.
Ince	Gordon Macdonald	Lab.	Newport	Sir Reginald J. Clarry	C.	Stafford, Burton	Col. J. Gretton	C.
Lancaster	H. Ramsbotham	C.	Norfolk, Eastern	Viscount Elmley	L. Nat.	" Cannock	W. M. Adamson	Lab.
Lonsdale	Lord Balmil	C.	" King's Lynn	Capt. S. A. Maxwell	C.	" Kingswinford	Arthur Henderson	Lab.
Middleton & Prestwich	Sir A. N. Stewart-Sandeman	C.	" Northern	T. R. A. M. Cook	C.	" Leek	W. Bromfield	Lab.
Mossley	Austin Hopkinson	Nat.	" Southern	J. A. Christie	C.	" Lichfield	J. A. Lovat-Fraser	N. Lab.
Newton	Sir Robert Young	Lab.	" South-western	Somerset S. de Chair	C.	" Stafford	W. G. A. Ormsby-Gore	C.
Ormskirk	Sir S. T. Rosbotham	N. Lab.	Northampton	Sir Mervyn Manningham-Buller	C.	Stone	Sir J. Q. Lamb	C.
Royton	H. Sutcliffe	C.	Northamptonshire			Stepney	Maj. C. R. Attlee	Lab.
Stretford	A. C. Crossley	C.	Daventry	Capt. E. A. FitzRoy	C.	Limehouse	D. Frankel	Lab.
Waterloo	Capt. H. M. Bullock	C.	Kettering	J. F. Eastwood	C.	Mill End		
Westhoughton	R. J. Davies	Lab.	Peterborough	Lord Burghley	C.	Whitechapel and St. George's	J. H. Hall	Lab.
Widnes	R. A. Pilkington	C.	Wellingtonborough	Wing-Comm. A. W. H. James	C.	Stirling & Clackmannan		
Leeds, Central	Hon. Richard Denman	N. Lab.	Northumberland			Clackmannan & Eastern	L. MacNeill Weir	Lab.
" North	Capt. Osbert Peake	C.	Berwick-upon-Tweed	Sir Hugh Seely	L.	" Western	T. Johnston	Lab.
" North-east	Maj. Sir J. D. Birchall	C.	Hexham	Col. D. C. Brown	C.	Stirling & Falkirk District	J. Westwood	Lab.
" South	H. C. Charlton	Lab.	Wansbeck	Lt.-Col. B. Cruddas	C.	Stockport (2)	Sir Arnold Gridley	C.
" South-east	Maj. J. Milner	Lab.	Norwich (2)	G. H. Shakespeare	L. Nat.		N. J. Hulbert	C.
" West	S. V. T. Adams	C.	Nottingham, Central	H. C. Strauss	C.	Stockton-on-Tees	Capt. H. Macmillan	C.
Leicester, East	A. M. Lyons	C.	" East	Sir T. J. O'Connor	C.	Stoke Newington	Sir G. W. H. Jones	C.
" South	Capt. C. Waterhouse	C.	" South	L. H. Gluckstein	C.	Stoke-upon-Trent		
" West	Harold Nicolson	N. Lab.	" West	S. F. Markham	N. Lab.	Burslem	Andrew McLaren	Lab.
Leicestershire			Nottinghamshire	A. Hayday	Lab.	Hanley	Arthur Hollins	Lab.
Bosworth	Sir William Edge, Bt.	L. Nat.	Daventry	F. J. Bellenger	Lab.	Sloke	Ellis Smith	Lab.
Harborough	Ronald Tree	C.	Kettering	Frederick Seymour	Lab.	Suffolk, East	E. L. Grenville	L. Nat.
Loughborough	Lawrence Kimball	C.	Peterborough	Cocks	Lab.	Lowesoft	P. C. Loftus	C.
Melton	W. Lindsay Everard	C.	Wellingtonborough	Marquess of Titchfield	C.	Woodbridge	W. Ross-Taylor	C.
Leigh	J. J. Tinker	Lab.	Oldham (2)	R. Assheton	C.	Suffolk, West		
Leith	Ernest Brown	L. Nat.	Orkney and Shetland	H. W. Kerr	L. Nat.	Bury St. Edmunds	Capt. F. F. A. Heilgers	C.
Lewisham, East	Lt.-Col. Sir Assheton Pownall	C.	Oxford	Maj. B. H. Neven-Spence	C.	Sudbury	Col. H. W. Burton	C.
" West	Sir Philip Dawson	C.	Oxfordshire, Banbury	Capt. R. C. Bourne	C.	Sunderland (2)	S. N. Furness	L. Nat.
Leyton, East	Sir F. Mills, Bt.	C.	Henley	Sir A. J. Edmondson	C.	Surrey, Chertsey	Samuel Storey	C.
" West	Rev. R. W. Sorensen	Lab.	Oxford University (2)	Sir Gifford Fox	C.	" Eastern	Com. A. Marsden	C.
Lincoln	W. S. Liddall	C.	Paddington, North	A. P. Herbert	Ind.	" Epsom	C. E. G. Campbell	C.
Lincolnshire			" South	Sir Arthur Salter	Ind.	" Farnham	Emmott	C.
Brigg	D. J. K. Quibell	Lab.		B. Braden	C.		Sir A. R. J. Southby	C.
Gainsborough	Capt. H. F. C. Crookshank	C.		Vice-Adm. E. A. Taylor	C.		Godfrey Nicholson	C.
Grantham	Sir Victor Warrender, Bt.	C.						



Constituency	Member	Party	Constituency	Member	Party	Constituency	Member	Party
Surrey ( <i>cont.</i> )			Warwick ( <i>cont.</i> )			Worcestershire ( <i>cont.</i> )		
" Guildford . . .	Sir J. J. Jarvis, Bt. . .	C.	" Rugby . . .	Capt. H. D. R. Margeson . . .	C.	" Evesham . . .	R. De la Bere . . .	C.
" Mitcham . . .	Sir R. J. Meller . . .	C.	" Tamworth . . .	Sir J. S. Paget Mellor . . .	C.	" Kidderminster . . .	Sir J. S. Wardlaw-Milne . . .	C.
" Reigate . . .	G. C. Touche . . .	C.	" Warwick & Leamington . . .	R. Anthony Eden . . .	C.	" Stourbridge . . .	Robert H. Morgan . . .	C.
Sussex, East			" Wednesbury . . .	J. W. Banfield . . .	Lab.	York . . .	C. I. C. Wood . . .	C.
Eastbourne . . .	C. S. Taylor . . .	C.	" Welsh University . . .	Capt. Ernest Evans . . .	L.	Yorkshire, East Riding		
East Grinstead . . .	Lt.-Col. R. S. Clarke . . .	C.	" West Bromwich . . .	F. O. Roberts . . .	Lab.	" <i>Buchrose</i> . . .	Maj. A. N. Braithwaite . . .	C.
Lewes . . .	Rear-Adm. P. H. Beamish . . .	C.	" West Ham, Plaistow . . .	Will Thorne . . .	Lab.	" <i>Holderness</i> . . .	Sir S. Servington Savery . . .	C.
Rye . . .	Sir G. L. Courthope, Bt. . .	C.	" <i>Silverthorn</i> . . .	J. J. Jones . . .	Lab.	" <i>Houenshire</i> . . .	Maj. W. H. Carver . . .	C.
Sussex, West			" <i>Stratford</i> . . .	T. E. Groves . . .	Lab.	Yorkshire, North Riding		
Chichester . . .	Maj. J. S. Courtauld . . .	C.	" <i>Upton</i> . . .	B. W. Gardner . . .	Lab.	" <i>Cleveland</i> . . .	Lt.-Com. R. T. Bower . . .	C.
Horsham & Worthing	Earl Winterton . . .	C.	" Westminster, Abbey . . .	A. Duff Cooper . . .	C.	" <i>Richmond</i> . . .	Maj. T. L. Dugdale . . .	C.
Swansea, East	David Williams . . .	Lab.	" <i>St. George's</i> . . .	Maj. O. F. G. Stanley . . .	C.	" <i>Scarborough &amp; Whitby</i> . . .	Sir Paul Latham . . .	C.
" West . . .	L. Jones . . .	L. Nat.	" Westmorland . . .	J. A. Parkinson . . .	Lab.	" <i>Thirsk and Malton</i> . . .	Robert Hugh Turton . . .	C.
Tottenham, North	R. C. Morrison . . .	Lab.	" Wigan . . .	D. G. Somerville . . .	C.	Yorkshire, West Riding		
" South . . .	Fred Messer . . .	Lab.	" Willesden, East . . .	S. P. Viant . . .	Lab.	" <i>Barkston Ash</i> . . .	Col. L. Ropner . . .	C.
Fynemouth . . .	Sir A. West Russell . . .	C.	" Wiltshire, <i>Chippenham</i> . . .	Capt. V. A. Cazalet . . .	C.	" <i>Caine Valley</i> . . .	E. Marklew . . .	Lab.
Wakefield . . .	A. Greenwood . . .	Lab.	" <i>Devizes</i> . . .	Sir Percy A. Hurd . . .	C.	" <i>Don Valley</i> . . .	A. Short . . .	Lab.
Wallasey . . .	Lt.-Col. J. T. Moore-Brabazon . . .	C.	" <i>Salisbury</i> . . .	Maj. J. A. St. G. Fitzwarrenne-Despencer-Robertson . . .	C.	" <i>Elland</i> . . .	T. Williams . . .	Lab.
Wallsend . . .	Irene M. B. Ward . . .	C.	" <i>Swindon</i> . . .	W. W. Wakefield . . .	C.	" <i>Hemsworth</i> . . .	L. Levy . . .	C.
Walsall . . .	J. A. Leckie . . .	L. Nat.	" <i>Westbury</i> . . .	R. V. Grimston . . .	C.	" <i>Keighley</i> . . .	George Arthur Griffiths . . .	Lab.
Walthamstow, East	Sir B. C. Beauchamp . . .	C.	" <i>Wimbledon</i> . . .	Sir J. C. Power . . .	C.	" <i>Penistone</i> . . .	H. B. Lees-Smith . . .	Lab.
" West . . .	V. La T. McEntee . . .	Lab.	" <i>Wolverhampton</i> . . .	I. C. Hannah . . .	C.	" <i>Pontefract</i> . . .	Tom Smith . . .	Lab.
Wandsworth			" <i>Bilston</i> . . .	G. Le M. Mander . . .	L.	" <i>Pudsey and Otley</i> . . .	H. G. McGhee . . .	Lab.
" <i>Balham and Tooting</i> . . .	Lt.-Col. G. Doland . . .	C.	" <i>East</i> . . .	Sir R. Bird . . .	C.	" <i>Ripon</i> . . .	A. Hills . . .	Lab.
" <i>Central</i> . . .	Sir J. Leigh . . .	C.	" <i>West</i> . . .	E. G. Hicks . . .	Lab.	" <i>Rother Valley</i> . . .	Sir C. Granville Gibson . . .	C.
" <i>Clapham</i> . . .	Marcus R. A. Samuel . . .	C.	" <i>Woolwich, East</i> . . .	Sir H. Kingsley Wood . . .	C.	" <i>Rothwell</i> . . .	Maj. J. W. Hills . . .	C.
" <i>Putney</i> . . .	Sir W. Lane-Mitchell . . .	C.	" <i>West</i> . . .	W. P. C. Greene . . .	C.	" <i>Shipley</i> . . .	E. Dunn . . .	Lab.
" <i>Streatham</i> . . .	N. B. Goldie . . .	C.	" <i>Worcester</i> . . .			" <i>Skipton</i> . . .	William Lunn . . .	Lab.
Warrington . . .			" <i>Worcestershire</i> . . .			" <i>Sowerby</i> . . .	A. C. Jones . . .	Lab.
Warwick . . .			" <i>Bewdley</i> . . .	R. J. E. Conant . . .	C.	" <i>Spen Valley</i> . . .	G. W. Richards . . .	C.
" <i>Nuneaton</i> . . .	Lt.-Com. R. T. H. Fletcher . . .	Lab.				" <i>Wentworth</i> . . .	M. S. McCorquodale . . .	C.
							Sir John Simon . . .	L. Nat.
							Wilfred Paling . . .	Lab.

**House of Lords.**—The number of peers entitled to sit in the House of Lords was (Oct. 1937) 775, comprised as follows: four princes of the blood royal, two archbishops, 20 dukes, 28 marquesses, 125 earls, 77 viscounts, 24 bishops, 464 barons, 16 Scottish representative peers, and 15 Irish representative peers. Only a fraction of this number, however, is at any time politically active in the House, the average attendance being about 80. The speaker is the Lord Chancellor, Viscount Hailsham, and the Lord Chairman of Committees is the Earl of Onslow. Other officers include the clerk of the parliaments, Sir Henry Badeley; the librarian, Mr. C. T. Clay; the examiner of standing orders, Mr. Edward Vigors, and Lieut.-Col. Sir R. Verney; the gentleman usher of the Black Rod, Lieut.-Gen. Sir William Pulteney; the yeoman usher, Brig.-Gen. Lord Esmé Gordon-Lennox; and the sergeant-at-arms, Maj.-Gen. Sir Charles Edward Cockran. The leader of the House is Viscount Halifax and the Opposition leaders are Lord Snell (Labour) and the Marquess of Crewe (Liberal).

**Massamaquoddy Bay.** This outlet of the St. Croix river lies between Maine and the Canadian Province of New Brunswick. At St. Andrews, the maximum tide, three days a month, is 25ft. and the average head of water is 15 feet. The Recovery Program of President Roosevelt, developed in 1933, included a project estimated to cost \$36,000,000—a somewhat conjectural sum—whereby a series of dams would hold back the incoming and outgoing tides, so creating water-power convertible into electricity. An original grant of \$10,000,000 was reduced to \$7,000,000 and work was begun on the immense undertaking. In August 1936, Congress declined to make further appropriations and the scheme was brought to a standstill. A village called Quoddy for employees had been laid out at a cost exceeding \$1,000,000 and temporary use was made of it as a camp for young men. President Roosevelt prophesied that in days to come, the "project would be sold to the American people." But Dr. Karl T. Compton, president of the Massachusetts Institute of Technology in Oct. 1937, included the scheme among projects which "might have been justified in case of an emergency" but were not "justified solely on engineering grounds." It was argued that there was no local demand for the volume of power expected from the tidal waters and that

a steam plant costing a fraction of the outlay would meet any possible demand.

**Patents.** A number of changes in the patent laws of the world have been effected in the last six years. Some countries have revised and redrafted their patent laws: England (1932); Italy (1934); Canada (1935); Germany and Denmark (1936); and others have made minor changes in their statutes.

Several distinct types of laws exist with respect to the granting of patents for inventions by different countries. The registration system, in which patents are granted on demand without any examination of the subject matter, obtains in France. The United States and Germany are outstanding examples of countries in which a rigid and extensive examination of applications for patents is made and the patent refused if not found novel. Other countries exhibit gradations between these two. In England, the Act of 1932 extended the scope of the former limited examination, so as to approximate more closely that of other countries.

The Latin countries in general follow the registration system, but the comprehensive revision of the patent laws of Italy in 1934 introduced the examination system, although it has not yet become effective.

A fundamental principle in the patent law of the United States has always been the recognition and importance of the inventor, as an individual. The application for patent must be made by the actual inventor, for a valid patent. In Canada also the actual inventor must be the applicant for the patent, and in both countries an oath of inventorship is required. In other countries the applicant for a patent need not be the actual inventor and the patent is ordinarily granted to the first to apply. Recent changes in some countries have laid emphasis on the patent as a reward and recognition of the inventor. Under the German law of 1936 the inventor has the right, capable of enforcement, of being named in the patent as the inventor, in those cases in which he is not himself the patentee. This also is true of the new Italian and Danish patent laws. The London Conference of 1934 for the revision of the International Convention for the Protection of Industrial Property adopted a new article providing that "The inventor has the right to be mentioned as such in the patent."



In most countries the publication or public use of an invention before the date of the application is a bar to the grant of a patent. The hardship of this rule has been mitigated by the new German law, which now provides that publication or use by the inventor, for a period of six months prior to the date of the application shall not constitute a bar to the grant of a patent. Likewise the Italian law of 1934 exempts certain publications for a year prior to the filing date of an application.

The United States and Canada have long provided a period of two years before the right to a patent is lost by publication or use.

Many improvements have been introduced in the administration of the U.S. Patent Office during the last several years. Other modifications of present procedure are in process of formulation. There have been considered also certain amendments of the statutes. After a special investigation, President Roosevelt's Science Advisory Board recommended (1935) the creation of a single Court of Patent Appeals to decide appeals in patent infringement suits now decided by ten different courts.

This recommendation was embodied in a bill on which extensive hearings were held by the Senate Patent Committee in 1937.

In 1936 the centennial of the Patent Act of 1836 was celebrated nationally, with Washington as the focal point. This Act was the first legislation to provide for preliminary compulsory examination of patent applications as to novelty, and for the establishment of a special office manned with examiners for the purpose.

The most recent data and estimates available show that 173,149 patents were granted by all the countries of the world in 1935. The number of patents granted by some countries during this year were: Argentina 1,280; Australia 2,129; Austria 4,000; Belgium 5,961; Canada 8,007; Czechoslovakia 3,200; Denmark 1,380; France 18,000; Germany 16,139; Gt. Britain 17,675; Hungary 2,270; Italy 9,890; Japan 4,766; Netherlands 2,800; Norway 1,260; Poland 1,723; Spain 2,001; Sweden 2,944; Switzerland 7,448; United States 44,944; U.S.S.R. 4,668. In 1937 the United States granted 43,271 patents. The total number of patents granted by all the countries to and including 1937 can be estimated as approximately seven and a half million; however, these do not involve that number of distinct inventions since an invention must be patented in each country to be protected in that country, and numerous inventions are thus patented in a number of different countries.

(C. P. Co.)

**Patton, Raymond Stanton** (1882-1937), naval officer, admiral, director of the U.S. Coast and Geodetic Survey since 1929, was for many years the nation's leading hydrographic engineer. Born in Degraff, Ohio, Dec. 29, 1882, he entered Government coast work immediately upon his graduation from Western Reserve and served without interruption until his death in Washington, Nov. 25, 1937.

**Peace:** see DISARMAMENT; PACIFISM; WARFARE.

**Peaches.** The peach crop in the U.S. in 1937 was 59,626,000 bu., worth \$51,749,000, as compared to a 47,650,000 bu. crop in 1936, worth \$36,883,000. The 1937 crop was nearly 2,500,000 bu. more than the annual average for five years, 57,298,000. These figures are from estimates by the U.S. Department of Agriculture.

In Canada the 1937 crop was estimated at 523,000 bu. by the Ministry of Agriculture. This is an increase of about 30% over the production of 1936.

Following is the production in 1937 in different States in the U.S., with the 1937 income from the crop in each State. The fig-

ures in parentheses give the production in 1936. California, 23,141,000 bu. (21,502,000), \$13,900,000. In California clingstones accounted for 15,407,000 bu. of the crop and freestones, 7,734,000 bushels. Georgia, 2,730,000 bu. (5,589,000), \$3,400,000. Pennsylvania, 2,673,000 bu. (799,000), \$2,100,000. Michigan, 2,652,000 bu. (1,720,000), \$2,375,000. Illinois, 2,117,000 bu. (256,000), \$2,150,000. North Carolina, 1,984,000 bu. (1,558,000), \$2,350,000. Tennessee, 1,860,000 bu. (854,000), \$1,350,000. New York, 1,806,000 bu. (1,232,000), \$1,675,000. Missouri, 1,728,000 bu. (107,000), \$1,050,000. New Jersey, 1,651,000 bu. (1,352,000), \$1,575,000. Virginia, 1,599,000 bu. (594,000), \$1,350,000. Texas, 1,392,000 bu. (1,156,000), \$1,050,000. Ohio, 1,296,000 bu. (169,000), \$1,375,000. Oklahoma, 1,073,000 bu. (20,000), \$750,000. Alabama, 990,000 bu. (1,720,000), \$650,000. Washington, 935,000 bu. (1,558,000), \$825,000. West Virginia, 528,000 bu. (90,000), \$425,000. Mississippi, 474,000 bu. (1,052,000), \$275,000. Maryland, 448,000 bu. (279,000), \$425,000. Indiana, 402,000 bu. (10,000), \$250,000. Delaware, 398,000 bu. (500,000), \$375,000. Louisiana, 269,000 bu. (378,000), \$170,000. Kansas, 256,000 bu. (18,000), \$80,000. Oregon, 241,000 bu. (258,000), \$250,000. Connecticut, 177,000 bu. (176,000), \$235,000. Massachusetts, 107,000 bu. (105,000), \$145,000. (S. O. R.)

**Pears.** Increased production of pears in 1937 was reported by British Columbia, Nova Scotia, and the United States. British Columbia harvested a crop estimated by the Ministry of Trade and Commerce at 277,100 boxes, compared to 267,300 boxes in 1936. In Nova Scotia the crop was estimated at 18,000 bu., 8,000 bu. larger than 1936 production, while in the United States the 1937 crop was the largest on record and was estimated by the U.S. Department of Agriculture as 30,139,000 bushels. This was 12% larger than the 1936 crop of 26,956,000 bu. and 24% higher than the five-year (1928-32) average of 24,344,000 bushels. In Ontario production declined from 196,800 bu. in 1936 to 157,400 bu. in 1937. The crop in Germany was estimated by the International Institute of Agriculture as 20,260,000 bu., slightly lower than average production. Smaller crops in 1937 were reported by the Institute for Belgium, Switzerland, Italy, the Netherlands, Denmark, Czechoslovakia, Hungary, and the Union of South Africa, and larger production in Sweden, Norway, Austria, and Bulgaria. France reported a larger crop of bartlettts, but smaller production for the late varieties. In the Pacific Northwest of the United States the bartlett crop was reduced by blight injury and scab damage, but late varieties yielded heavily. Production in most of the States was above average. About 30% more of the crop was in cold storage in Dec. 1937, than at the same time in 1936. The 1936-37 exports marked almost a record in pear shipments from the United States. In the eleven months from July 1, 1936, to May 31, 1937, 1,064,000 bu. were exported to the United Kingdom, 559,000 bu. to Canada, 392,000 bu. to France, 120,000 bu. to Sweden, 105,000 bu. to Brazil, 51,000 bu. to Egypt, 41,000 bu. to Palestine, and 20,000 bu. each to Cuba, Belgium, and Finland. (S. O. R.)

## Peel, William Robert Wellesley Peel,

1ST EARL (1867-1937), P.C., G.C.S.I., G.B.E., British statesman born Jan. 7. He was educated at Harrow and Balliol college Oxford, and was called to the bar at the Middle Temple in 1893. In parliament, as a Unionist, he represented South Manchester 1900-06, and Taunton, 1909-12. In 1912 he succeeded his father as 2nd Viscount Peel. He was chancellor of the Duchy of Lancaster and minister of transport, 1921-22; secretary of state for India, 1922-24 and 1928-29; first commissioner of works, 1924-28; and lord privy seal, 1931. He was a member



1930-31, of the Indian round table conference; chairman, 1931-32, of the Burma round table conference; and member of the Indian joint committee, 1933. His most recent task, and one of his most onerous, was performed as chairman of the Palestine royal commission, 1936-37. Lord Peel was created an earl in 1929, in which year he was also created Viscount Clanfield of Clanfield. He was appointed to the privy council in 1920, and was created G.B.E. in 1919 and G.C.S.I. in 1932. He died Sept. 8, 1937. His son succeeds him as 2nd earl.

**Peiping** (PEKING), the most famous and architecturally beautiful city of China, the capital of the Chinese Empire from about 1267 to 1368 and again from 1421 until the fall of the Manchu dynasty in 1911, and of the Chinese Republic from 1911 until 1928. It was captured in 1928 by the armies of the Chinese Nationalist Government, which had established its capital in Nanking, and was renamed Peiping (Northern Peace), the name which it bore under the early Ming emperors. It was occupied by the Japanese in the summer of 1937 (see CHINESE-JAPANESE WAR) and the Peace Maintenance Commission which was set up restored the old name of the city, Peking, in the fall. Peiping, or Peking, became the seat of a régime which was set up under Wang Ko-min and Tang Er-ho with Japanese sympathy and support and which claimed to exercise authority over North China under the name of the Provisional Government of China. Population (1936), 1,560,000. The city is separated by 90 mi. of level agricultural country from the coast of the Gulf of Pechihli. The climate shows the influence of the neighbouring Gobi desert, with hot summers, cold winters, and occasional dust storms. Of all the Chinese larger cities (Shanghai, Tientsin, Canton, Hankow), it is the least developed industrially, being without large factories. But it is a notable centre of the Chinese arts and handicrafts and until 1937 occupied a very important place in Chinese intellectual life. There were more than 50,000 Chinese students of all grades in Peiping before the outbreak of Sino-Japanese hostilities in the summer of 1937 caused a serious setback to intellectual life. All the Chinese universities in the city were closed, the premises in some cases being occupied by Japanese troops; and only Yenching university (founded and supported by American missionary contributions) and two other institutions of higher learning in which there was a foreign interest found it possible to carry on work during the first months of the Japanese occupation. It is still too early to predict whether this blow to Peiping's significance as an intellectual centre will be permanent. Many professors and scholars with nationalist views have found it expedient to leave the city. Peiping is the seat of the most elaborate and impressive medical undertaking in the Far East, the hospital and medical school equipped by the Rockefeller Foundation. The city is extraordinarily rich in the monuments of the Chinese imperial past. Among the most famous of these are the Temple of Heaven, the Summer Palace, the Winter Palace, the Lama Temple, the Temple of Confucius, and the Bell Tower. A small part of the city is walled off as the Legation Quarter, where foreign embassies and legations are located and where the signatory Powers of the Boxer Protocol (with the exception of Russia, Germany, and Austria) possess the treaty right to maintain troops. Most foreign powers have also opened diplomatic missions in the new Chinese capital, Nanking, but the whole future of foreign diplomatic representation in China is uncertain as a result of the course of Sino-Japanese hostilities.

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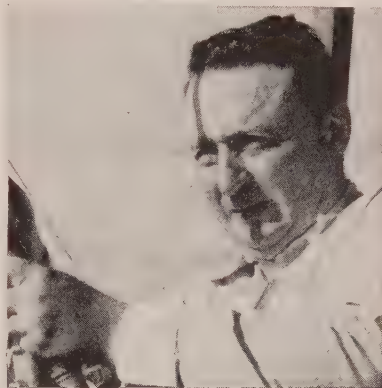
**pellagra:** see DIETETICS.

**Permba:** see ZANZIBAR.

**Pennsylvania**, one of the original States of the United States, popularly known as the "Keystone State," area, 45,126 sq.mi. (294 sq.mi. water); population (U.S. census, 1930) 9,631,350; (estimate, July 1, 1937), 10,176,000. Capital, Harrisburg, 80,339.

Cities with a larger population in 1930 were Philadelphia, 1,950,961; Pittsburgh, 669,817; Scranton, 143,433; Erie, 115,967; Reading, 111,171; Allentown, 92,563; Wilkes-Barre, 86,626; and Altoona, 82,054. Of the State's population 6,533,511 were urban, or 67.8%; 7,959,551 native white; 1,233,051 foreign-born; and 431,257 Negro.

**History.**—The first Pennsylvania legislature to be controlled by Democrats in over ninety years met early in 1937, and pre-



GEORGE HOWARD EARLE III, governor of Pennsylvania

sented the Governor with 137 bills of which 17 were vetoed. Those approved featured labour legislation. Thus one act provided for a 44-hour week excepting only domestics, agricultural workers, and adults receiving more than \$25 a week in executive positions or the learned professions. A second measure established a labour relations board, limited the use of injunctions in labour disputes, and upheld the right of organization. Still another bill provided minimum wages for women and minors exempting only newsboys, domestic help, and agricultural workers. These statutes were intended to prevent repetition of the serious situation resulting from strikes during the year at Hershey, Bellefont, and Johnstown. Other labour provisions included bills requiring full railroad crews and regulating industrial work in homes.

The most perplexing problem faced by the legislators was the bootlegging of coal from abandoned mines. The illegal seizure of coal had reached such proportions by the first of the year that Federal intervention seemed imminent. This was forestalled by the establishment of a State commission to study the problem and inaugurate plans for State regulation in event of continued difficulty. Leasing or purchase of inoperative mines by either the State or distressed miners was seriously discussed; the situation being slightly eased when New York city legislated against sales of bootleg coal. At the end of the year, the proper solution was still being seriously debated.

Other measures of significance included a bill reorganizing relief administration by abolishing local poor boards and establishing a State Board of Public Assistance to operate through two city and 66 county districts; provision for a toll highway between Harrisburg and Pittsburgh; and an act granting the State wide powers of liquor control.

Of five constitutional amendments submitted to the voters in November, only that legalizing pensions to mothers and to the blind was approved. The electorate refused to uphold introduction of a State income and inheritance tax despite the Governor's plea that such funds would be used to lighten the burden of local school support. The voters likewise rejected consolidation of the Philadelphia city and county governments, although even the Republican city chairman supported the administration's proposal. Also defeated were an amendment for the issue of \$42,000,000 in bonds for State institutions and one which would have permitted an annual submission of constitutional amendments instead of at the prescribed five-year interval. The amendments were voted



upon only after court decisions upheld their submission. Whether such sanction will be given amendments adopted by the 1937 legislature for county consolidation, \$50,000,000 for State roads, and exemption of local revenue producing bonds from debt limits is problematical.

The leading officials are: governor, George H. Earle; lieutenant-governor, Thomas Kennedy; treasurer, Charles A. Waters; attorney-general, C. J. Margiotti; chief justice, J. W. Kephart.

**Education.**—Pennsylvania contains over 50 colleges and universities. During 1936 there were 10,768 public elementary schools with 1,367,377 pupils and 38,987 teachers and 1,234 high schools with 613,478 pupils and 20,332 teachers.

**Banking and Finance.**—On June 30, 1936, Pennsylvania had 1,139 banks (429 State and 710 national) with a capital of \$328,671,000, deposits of \$4,873,754,000, and total resources of \$6,052,379,000. For the fiscal year ending May 31, 1937, the State Treasury reported receipts of \$304,930,895 which with expenditures of \$295,297,462 and previous balances left a balance of \$10,982,320. On the same day the State debt stood at \$122,442,000.

For 1937-39 the legislature voted a budget of \$355,791,086 including relief appropriations of \$137,000,000. To meet these expenses, a normal tax income of \$162,005,206 and emergency taxes of \$186,630,000 were expected with \$156,145,105 coming from motor licence, gasoline and other earmarked funds. Regular taxes were levied on real property valued at over \$9,000,000 and personal property assessed at more than \$2,500,000. Emergency taxes extended by the legislature were a four mill tax on personal property, a one cent tax on gasoline for relief purposes, taxes on cigarettes, liquor sales, bank shares and public utilities. An emergency tax on corporation incomes was continued but reduced from 10% to 7%. The legislature also adopted a chain store tax, but collection must await court decisions.

An extensive building program was inaugurated early in the year when the State Supreme Court upheld the creation of a State building authority by the 1935 legislature. The project provides for construction projects valued at \$56,190,000, one-half of which will be spent for State hospitals, one-quarter for educational institutions, and over \$5,000,000 for a State finance building. The Federal Government will pay \$20,000,000 of the expense and will loan up to \$50,000,000 at 4%.

**Agriculture, Manufactures, Mineral Production.**—According to the 1935 agricultural census, Pennsylvania possessed 191,284 farms of 15,855,343 acres with land and buildings valued at \$861,706,599, a crop production of \$68,839,000 and live stock and live stock products worth \$163,951,000. During 1936 the leading crops of the State were 54,572,000bu. of corn worth \$55,117,720; 2,470,000 short tons of hay, \$35,321,000; 26,268,000bu. of potatoes, \$30,208,200; 19,615,000bu. of wheat, \$19,801,150; and 24,009,000bu. of oats, \$12,244,590.

Recent statistics reveal that in 1935 Pennsylvania was surpassed only by New York in industrial activity with 13,050 establishments employing 841,234 workers and having an output valued at \$4,291,847,924. The leading products in order of value were: steel works (\$575,915,179); petroleum refining (\$204,465,575); knit goods (\$174,171,093); printing and publishing (\$171,678,643); electrical machinery (\$134,415,923); men's clothing (\$132,534,781); bread and other bakery products (\$129,066,111); and meat packing (\$100,453,515).

Statistics covering U.S. mineral production during 1935 show a Pennsylvania output of \$520,575,611, placing the State close to Texas and far ahead of all others. The product responsible for Pennsylvania's leading position was coal valued at \$382,300,565, of which \$210,130,565 was anthracite. Other important items were natural gas, \$39,434,000; petroleum, \$33,840,000;

cement, \$21,080,596. Not listed in the State's production total because of the employment of materials from outside Pennsylvania was the pig iron output valued at \$102,027,692.

In May 1936 there were 38,032mi. of State highways of which more than 27,750mi. were surfaced. Of the total mileage, 23,392 were rural roads under State control. During the year motor registration approached 2,000,000 and licences issued exceeded that figure. Of 13,206,000ac. of forest, 1,649,439 were controlled by the State.

**Pennsylvania, University of.** The University of Pennsylvania opened its 1937-38 session with an enrolment of approximately 15,810 and a faculty of approximately 1,428. In 1937 the university inaugurated a bicentennial campaign to increase its material resources as the means of celebrating in 1940 the two hundredth anniversary of its founding. Over \$2,000,000 had been realized through this effort by the end of the year.

The university museum conducted, during the year 1937, expeditions in Persia, Mesopotamia, Cyprus, Africa, Guatemala and the United States. The Wharton school of business administration established an Institute of Local and State Government because of the general neglect of this aspect of government, and to arouse a greater student interest in the duties of citizenship. The courses in chemical, civil, mechanical, and electrical engineering were accredited by the Engineers' Council for Professional Development. As a prerequisite for admission, the veterinary school required one year of college work. The school received through the family of the late Effingham B. Morris a farm for the study of animal pathology, for the support of which the legislature appropriated \$100,000. The 13 separate schools with the affiliated divisions continued to bring together for the common good and public need the abilities of the entire staff. Progress was noted in medical and other departments of research.

(T. S. G.)

**Pennsylvania Museum of Art:** see ART EXHIBITIONS; ART GALLERIES AND ART MUSEUMS.

**Pension, Old Age:** see LABOUR LEGISLATION; RELIEF.

**Pepper:** see SPICES.

**Perfumes:** see SOAP, PERFUMERY AND COSMETICS.

**Perim:** see ADEN.

**Perin, Charles Page** (1861-1937), American metallurgical engineer who as president of the Niagara Electrolytic Iron Company built one of the first plants in the United States for the manufacture of pure iron by electrolysis. Born at West Point, N.Y., Aug. 23, 1861, he was graduated from Harvard university in 1883 and later studied at the École des Mines in Paris. During his early career he was connected with the Carnegie Steel Company as a blast furnace superintendent. During 1905-06 he built the industrial towns of Keokee and Imboden, Va., where he operated large coke plants; and about 1908 he built the model town of Jamshedpur, India. He made a study of the fuel supply of the Trans-Siberian Railroad for the Russian Government in 1901 and was consulted 30 years later by the Soviet Government in connection with the development of its steel industry. He was also retained as consulting engineer by both the Lung Yen Mining Corporation of China and the Japanese Government. He was a past president of the American Institute of Consulting Engineers and the American Iron and Steel Institute and in 1919 was chief engineer of the appraisal committee attached to the Peace Commission. He died in New York city on Feb. 16, 1937.



**Perkins, Osgood** (1892–1937), leading American actor, was born at West Newton, Mass., May 6, 1892. Following his graduation from Harvard University in 1914, he studied the violin for nine years. It was not until 1924 that he scored an immediate hit in his first Broadway appearance in *Beggar on Horseback*. From that time he was in constant demand because of his versatility. Of the plays in which he appeared, *The Front Page* (1928–29), *Uncle Vanya* (1930), *Goodbye Again* (1932), *The School for Husbands* (1932), *Ceiling Zero* (1935), and *The End of Summer* (1936) were among the most successful. He also appeared occasionally in screen productions. He was first vice-president of the Actors Equity Association, of which he had been a councillor since 1926. His death occurred on Sept. 21, 1937 in Washington, D.C., following the opening night performance of a new play.

## Permanent Court of International Justice.

In May 1937, M. Charles de Visscher (Belgium) was elected to the seat vacated by the death of Baron Rolin-Jaequemyns (Belgium), but the vacancy left by the death of M. A. Hammarskjöld (Sweden) in July was not filled. At the end of the year the court was composed as follows: M. Guerrero Salvador, *president*; Sir Cecil Hurst (United Kingdom), *vice-president*; Count Rostworowski (Poland), M. Fromageot (France), M. de Bustamante (Cuba), M. Altamira (Spain), M. Anzilotti (Italy), M. Urrutia (Colombia), M. Negulesco (Rumania), Jonkheer van Eysinga (Netherlands), M. Nagoaka (Japan), M. Cheng Tien-hsi (China), Mr. Manley O. Hudson (U.S.A.), M. de Visscher (Belgium).

On April 26, Monaco, by signing the optional clause, brought up to 41 the number of states bound by it.

Three judgments were handed down by the court during the year:

(i) *Case between Belgium and the Netherlands regarding the diversion of waters from the river Meuse*.—On Aug. 1, 1936, the Netherlands instituted proceedings against Belgium under the optional clause on the ground that certain works by Belgium in connection with the construction of the Albert canal (Liège to Antwerp) and the manner of supplying with water certain canals to the north of the country were inconsistent with the treaty of May 12, 1863, concerning the régime for taking water from the river Meuse. The Belgian Government, in a counter-claim, held that the Netherlands, by constructing the Borgharen barrage and the Juliana canal (Maestricht to Maasbracht), had committed a breach of the same treaty. On June 28, 1937, by ten votes to three, the court rejected both the submissions of the Netherlands and the Belgian Government's counter-claim.

(ii) *Case between France and Greece concerning lighthouses in Crete and Samos*.—On March 17, 1934, the court handed down a judgment, whereby it decided the principle that the contract of April 1913 between a French firm and the Ottoman Government, extending from Sept. 1924 to Sept. 1949, concession contracts granted to the said firm, was duly entered into and was operative regarding the Greek Government "in so far as concerns lighthouses situated in the territories assigned to it after the Balkan wars or subsequently." The court, however, added the reservation that it was "not called upon to specify which are the territories where lighthouses in regard to which the contract of 1913 is operative are situated." After discussions, the Greek and French governments, on Aug. 28, 1936, signed a special agreement asking the court for judgment regarding the applicability of the principle laid down in March 1934 to lighthouses in Samos and Crete. Judgment was rendered by the court on Oct. 8, 1937, whereby it was decided by ten votes to three that the lighthouses in Samos

and Crete were covered by the contract of 1913.

(iii) *Case between Belgian and Spanish Governments as to whether the responsibility of the Spanish Government was involved in regard to the death of Baron Jacques de Borchgrave*.—The case was submitted by a special agreement of Feb. 20, 1937, between the two governments. On Nov. 6, 1937, the court rendered judgment overruling unanimously the preliminary objections of the Spanish Government and fixing the time-limits for the continuation of the written proceedings on the merits. At the end of the year two cases were pending, the *Moroccan Phosphates Case* between France and Italy, submitted by Italy in March 1936, and the *Panevezys-Saldutiskis Railway Case* between Estonia and Lithuania, submitted by Estonia in Nov. 1937.

(S. A. HE.)

**Persia:** see IRAN.

**Peru**, a republic on the West Coast of South America; language, Spanish; capital, Lima; president, Gen. Oscar R. Benavides. The area is 532,185sq.mi., including approximately 100,000sq.mi. in dispute with Ecuador. In July 1937, the first official census since 1876 was begun. Population (estimated, 1935) 6,791,914. The principal cities, with estimated populations, are: Lima, 281,000; Callao, 75,000; Arequipa, 70,000; Cuzco, 40,000.

**History.**—Government is by decree in the absence of regular congressional sessions and is controlled by the president-dictator, General Benavides. In 1937, Peru continued the steady economic improvement manifested since 1932, a condition due largely to the increased production of gold and cotton. The chief disturbing factors were the continued agitation by members of the proscribed Apra party, which resulted in disorders and arrests, and the uncertainties attending the efforts to settle the boundary dispute with Ecuador. Negotiations for amicable adjustment of the controversy were started in Washington in September 1936, with an agreement to accept United States arbitration in the event of failure. Friction along the frontier was acute in June, with the dictators of the disputant countries unwilling to make concessions lest they be capitalized upon by opposing factions. The crisis passed, but the year closed with no definite progress in the negotiations.

**Education.**—In 1936 there were 3,802 elementary and 45 secondary schools, with a total enrolment of approximately 525,000. The budget allotted 10% to education. Higher education is provided by technical schools and by the University of San Marcos (Lima), the oldest in America.

**Trade and Communications.**—Regular steamship service and five different airlines provide Peru with adequate external communication. There are over 2,600mi. of railways (about 70% Government-owned), and approximately 13,000mi. of highways mostly improved. Around 13% (\$5,000,000) of the national expenditure went to highways in 1936. Peruvian foreign trade regularly shows a favourable trade balance, offset, however, by the extensive foreign investment in the country. Imports (principally foodstuffs and manufactured articles) totalled 193,500,000 soles in 1936, with the United States the leading source (33%), followed by Germany and Great Britain. Exports (largely petroleum products, sugar, and minerals) totalled 335,800,000 soles, with 22% to Great Britain, 21% to the United States and 11% to Germany. The value of imports from and exports to the United States increased 24% and 67% respectively in the first nine months of 1937, representing a substantial increase in the United States' share of the foreign trade.

**Agriculture and Mining.**—Peruvian industry, with the exception of sugar, is primarily in foreign hands; foreign investment



is estimated at over \$400,000,000, of which nearly half is United States capital, over one-third British, and much of the balance German and Japanese. United States interests own the valuable mines and smelters and British control 80% of the oil, while Japanese are prominent in the rapidly-expanding cotton production. In addition, 24% of the sugar output is United States-owned. Agricultural production, estimated at \$100,000,000 annually, accounts for half the national income, with cotton, sugar, rice, and wheat the leading items. Petroleum output in 1936 was valued at 133,000,000 soles, with silver 36,000,000 soles, copper 27,000,000 soles, and gold 21,000,000 soles. Vanadium and tungsten are also important.

**Finances.**—The monetary unit is the sol (value: 24.5¢ in U.S.). The national budget in 1936 was \$34,478,633.25.

(L. W. BE.)

**Pests, Agricultural:** *see* ENTOMOLOGY.

**Petrol:** *see* GASOLINE; PETROLEUM.

**Petroleum.** World production of petroleum (crude oil) during 1937 will undoubtedly reach a new high, mainly because of a substantial increase in United States output. Soviet Russia, Venezuela, Iran (Persia) and Bahrein island (Persian gulf) are among the other countries which will show greater output when final figures become available.

In all countries largely dependent on outside sources for oil, such as England, France, Germany, Italy and Japan—every effort has been made to stimulate home production. Increasing use of the motor car in these countries has largely resulted in increased imports. Great Britain is consuming 78,900,000bbls. of petroleum products compared with 59,000,000bbls. in 1932; France, 42,000,000bbls. against 33,500,000bbls.; Germany 37,000,000bbls. against 21,000,000bbls.; Italy 19,900,000bbls. against 10,370,000bbls.; Japan 28,000,000bbls. against 14,000,000bbls. in 1932.

England and France, with American interests, have successfully developed Iraq production in the Kirkuk field which is taken by pipe line to the Mediterranean through the Franco-Syrian town of Tripoli and branches at Haditha to the port of Haifa, under British mandate. British petroleum policy has had further success in Arabia, in Hejaz and in Yemen. Production by American interests at Bahrein island (under British protectorate) has increased. Japan has managed to boost Formosa production, as well as output from North Sakhalin, leased from Soviet Russia.

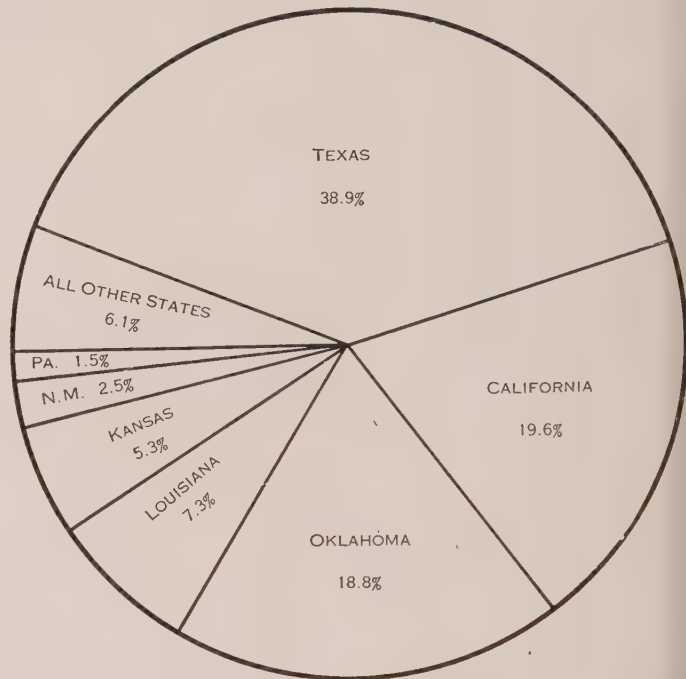
Following decline of the Grozni field and the old oil fields of Baku, Russia has succeeded in making large extensions of producing territory in Grozni, Baku and Maikop, largely through replacement of old freefall and cable drilling methods by American rotary drilling methods and by means of deeper drilling. Utchkezel and Handay, in Middle Asia, is yielding increasing oil. New oil zones are promised in the Turcoman republic, while Crimean oil properties show promise.

The estimated crude oil production in the United States for 1937 is 1,275,000,000bbls. against 1,098,516,000bbls. in 1936, a new high record reflecting increased demand for petroleum products, particularly for gasoline (*see* GASOLINE), as the recovery from the depression gained impetus through the early months of the year. While production of oil in the United States is restricted by State conservation laws, supported by the Interstate Oil Compact and the Federal Connally Act forbidding interstate transportation of "hot oil"—petroleum produced in violation of State production quotas—the year saw one of the most active drilling campaigns in the history of the industry. In Texas, Oklahoma and Kansas, and beyond the Rockies in California, geologists carried on unusual searches for favourable prospects. It appears that the 26,000 new wells of 1936 will be exceeded by 6,000 and will

closely approach the all-time record activity established in 1920.

Despite the heavy drain on American oil fields, which have produced 20,000,000,000bbls. of oil since 1857, 64% of total world production, the United States continues to be in a satisfactory situation as to petroleum reserves. Such fields as East Texas, Yates, Winkler, Conroe and Van in Texas, the Seminole, Oklahoma City and Fitts areas in Oklahoma, Kettleman hills in California and the fields of Michigan and Central Illinois have kept the reserve figure from diminishing. Total reserves as of Jan. 1, 1937, were estimated by the American Petroleum Institute Committee on reserves at 13,063,000,000 barrels.

Due to restriction of individual well production and more effi-



PETROLEUM: Source, by States, of the 1,098,516,000 barrels produced in the United States in 1936

cient utilization of the natural reservoir energy such as gas and water to promote greater ultimate recovery, the actual average per well production has increased from 2,400bbls. per annum in 1926 to 3,110bbls. per annum in 1936. Experts say that ample reserves remain in sight at familiar depths of 3,000 to 5,000ft. to take care of the world's needs for some years to come but that has not stopped deep well exploration. With an eye to the distant future, the American industry has been going ahead quietly, probing deeper and deeper, studying formations, perfecting deep drilling technique, and sometimes finding oil. The search for petroleum two miles down and more has been carried forward in widely scattered areas. Texas boasts the deepest well in the world—12,786 feet. Louisiana has the deepest producer in the Lirette field, completed in 1936 at a depth of 11,619 feet. California has a number of deep wells, including one in the Kettleman hills field producing at 10,735ft. which was completed in 1937. Mexico drilled a test well of 10,000ft., Rumania one of 11,000ft., and Iran has one deeper than 10,000 feet. An illustration of the possibilities of deep well drilling is given in the La Fitte field in Louisiana where it is estimated that the wells around 10,000ft. deep have established total oil reserves of 35,000,000 barrels.

Probably the most important development in the American industry is the achievement of greater stability. Until recent years, efforts to approximate an equality between supply and demand were more or less unsatisfactory; it was feast or famine. Within the last few years, the U.S. Bureau of Mines with increasing accuracy has predicted the future demand for petroleum and its



products and recommended production quotas to the regulatory bodies of the several producing States. These quotas are put into effect. The policy has practically halted periodic over-supply which formerly resulted in excess storage above ground and its attendant waste. Oil not required for current consumption and reasonable working stocks is permitted to remain stored in its natural reservoir which, in turn, contributes to the more efficient extraction by conserving the natural reservoir energy.

With the growth of conservation principles, there have come increasing limitations upon, and exceptions to, the rule of oil capture. Today an owner or lessee cannot drill without the permit of a regulatory body; locate a well except as the applicable spacing rule or exception specifies; penetrate surface water sands without adequate subsequent protective casing; complete a well without a proper casing program and suitable means for shutting off extraneous water; produce a well except through tubing with restricted flow; utilize gas in reservoir as a lifting agency beyond a permitted gas-oil ratio; currently produce in excess of established allowable production; create fire hazards or waste oil by use of earthen storage; transport oil by pipe line without a pipe line permit; dispose of salt water without prevention of pollution; or abandon a well without proper plugging. In these and many other ways he must subordinate his hitherto unrestricted right of capture to the public policy of the state.

There has been a distinct trend toward wider and more uniform well spacing. Increasing improvement in petroleum technology and associated sciences having to do with reservoir energy and efficient use of natural gas in producing oil has kept pace with equipment and drilling methods permitting much deeper exploration. By the employment of geophysical methods such as the torsion balance, seismograph, magnetometer and gravimeter, oil exploration has widened, lengthened and deepened. Largely due to their use in the last 15 years, the deep well's stature has changed from 5,000 to 12,000 ft., and the sub-surface horizons of the future are no longer delimited. At the present time it is estimated that about 75% of the new major pools are being discovered by geophysical methods.

In the American industry further significant advances have been made in refining processes, particularly polymerization (*see GASOLINE*). This process is the most important since the cracking process of which it is the product. Without benefit of cracking, the gasoline demand since 1920 could not have been satisfied without a 60% increase in the total of the crude oil that has actually been produced. Polymerization processes have been producing large quantities of gasoline from refinery gas and natural gas. Hydrogenation is another process past the experimental stage and in reserve for the future. It provides for making gasoline from the heaviest residues. In earlier days the refiner's cuts of crude oil designed to satisfy demand for one product resulted in

overproduction of others. Now the refiner is more nearly approaching the flexible position of making the products desired in the proportions desired.

The past year has been noteworthy for the "coming of age" of the petroleum chemical industry. Researches carried on since 1927 by the American Petroleum Institute, the U.S. Bureau of Standards and the petroleum companies have resulted in determining the identity and approximate amount of the significant hydrocarbons actually in petroleum, in the development of processes of fractionation which can be used economically on a commercial scale to effect the separation of wanted hydrocarbons and in the accumulation of information on the chemical, thermodynamic and kinetic constants of hydrocarbons and their derivatives. The petroleum chemical industry is now successfully making a host of chemical products. The wresting from nature of knowledge of the chemical constitution of petroleum is one of the most important developments in the history of the industry. The world's dependence on petroleum continues to increase and the importance of petroleum sources of supply becomes more pronounced as industrial development progresses. Moreover, as nations arm and as wars are fought today in the air and with mechanized land equipment and with ships oil-fueled or Diesel-engined, oil must be had for national defence. More than 1,750,000,000 bbls. of petroleum products are consumed annually throughout the world. Gasoline runs 40,000,000 motor vehicles, as well as planes, tractors, stationary engines and other power plants, the world requiring 675,000,000 bbls. annually. For industrial and domestic purposes and on ships the world consumes more than 700,000,000 bbls. of fuel oil annually. Other major products of petroleum required by the world are lubricants, utilized wherever and whenever machinery operates; and kerosene, illuminating millions of homes. (*See also GASOLINE; MEXICO: History.*)

(L. M. F.)

**Philadelphia**, third largest city of the United States, conducted in 1937 a celebration of the 150th anniversary of the signing of the Constitution of the United States, which was continued over a period of 112 days (May 10 to September 17). Several dramatic strikes; the Grand Jury probe of gambling and police; a vain attempt to reorganize the transit company; and the also unsuccessful effort of Mayor S. Davis Wilson to obtain city administration of the municipal gas works, which for 30 years have been leased to the United Gas Improvement Company, were outstanding features of the year.

Mr. Wilson had been elected mayor on a pledge to bring "fifty cent gas, and five cent car fares," both of which programs have been declared unfeasible. The gas lease expired December 31, but after months of hearings, and discussion of plans, the city council, on December 17, voted to renew it. On December 29, the mayor vetoed the ordinance, and the same day the Council passed the lease over his veto. The mayor announced the lease was contrary to the provisions of the city charter, and was unfair. On December 30, a taxpayer's suit was filed to enjoin the mayor and council from putting the lease into effect.

In January, 1937, a Joint Legislative Committee began investigation of the city-county government of the city, and reported favouring the abolishment of the Municipal Court and other changes, and was authorized to continue until the next session of the Assembly. At the election in November voters defeated amendments to the State Constitution, which would permit the consolidation of city and county governments in Philadelphia. On September 15, District Attorney Charles F. Kelley asked Judge Curtis Bok for a Grand Jury investigation of gambling and police. Five alleged operators of gambling houses so far have been indicted. The investigation continues.

U.S.A.	1,097,640,000 BBLS.
U.S.S.R.	215,578,060 BBLS.
VENEZUELA	165,452,400 BBLS.
RUMANIA	61,471,172 BBLS.
IRAN	57,363,600 BBLS.
ALL OTHER COUNTRIES	212,724,718 BBLS.

WORLD PRODUCTION OF CRUDE PETROLEUM in 1936: total, 1,810,229,950 million barrels



The Works School Survey, in a report given out in September, recommended drastic changes in the school system in Philadelphia, including the abandonment of the Normal school. In October, Mayor and Mrs. Wilson began a taxpayers' suit against the Board of Education to test that body's constitutional right to the power of taxation. The court ordered that the board should not impose a greater tax than 85¢ on each \$100 assessed value; the board took an appeal.

On May 6, 5,000 union hosiery workers took possession of the Apex hosiery plant, and on June 23, the mayor led 256 of them out of the building. The strike ended a month later. There were two city-wide strikes of truck drivers; the first on July 2, which paralyzed the city and prevented the issuance of the morning papers on July 3. A second strike was begun on August 2. On August 4, the mayor declared "a state of emergency" existed, which had the effect of ending the disorder, five hours later.

(J. JAC.)

**Philately.** A conservative survey of the year just past does not disclose any great changes in the philatelic pattern of the world. The hobby continues to interest an ever-increasing number of collectors with, of course, the greatest activity being noted in England, the Continent and the United States. Much enthusiasm has been noted in South Africa, Australia and New Zealand where important exhibitions have been held. Several prominent collections have been disposed of by auction both in England and the United States where the items offered found a ready market at surprisingly high prices. Outstanding rarities have continued to increase in value whenever offered for sale. A definite trend toward collecting foreign stamps has developed in the United States and throughout the world generally collecting along serious lines as opposed to merely filling spaces in printed albums is finding favour. The total number of stamps listed in the major catalogues for 1937 approximates 2,000—slightly more than for the previous year.

Three major stamp issuing events are noted for the year, the first of which occurred in May when Great Britain issued throughout the Empire stamps to commemorate the coronation of King George VI and Queen Elizabeth. This series which totalled 202 stamps (three each for the 45 Colonies and 67 for Great Britain and the Dominions), had long been awaited by philatelists and the advance orders reached tremendous proportions as speculators sought to repeat the profits made on the Silver Jubilee series of 1935.

The second is a direct outgrowth of the war in Spain which has resulted in the philatelic world being flooded with an avalanche of stamps purported to have been issued by the governments of

both warring factions. The authenticity of many of these stamps was questioned by philatelists, it being generally conceded that at least some of them were not authorized. The number of stamps issued assumed such alarming proportions—there being more than 1,000 reported—that editors of the great catalogues of the world abstained from listing the stamps until such time as authoritative information can be gathered.

The third, and in many ways the most interesting event has been the promotion of miniature or "souvenir" sheet collecting. This type of commemorative stamp consists of a block of four or a pair, or even a single stamp printed in the centre of a small-sized sheet of paper bearing appropriate inscription of the event commemorated. Sometimes the stamps are of special designs, more often they are in the same design as a regularly issued stamp printed in a different or even in the normal colour. In 1926, and on various other occasions, the United States prepared "miniature" sheets in compliment to philatelic exhibitions. The idea had long been used by various philatelic exhibitions in Europe as a means of obtaining revenue to promote the exhibitions. Usually the sheets were only obtainable at the expositions themselves and their sale limited to one set with each ticket of admission. Seized upon during the last year and exploited by operators of philatelic exhibitions, and more recently by governments themselves as a means of obtaining additional revenues, souvenir sheets achieved an enormous popularity. The exploiters behind the newer emissions, however, seem to have overstepped themselves by charging excessive premiums over the face values of the stamps and in so doing have incurred the wrath of the philatelic press. In fact, the leading catalogue of Great Britain (Gibbon's) has refused to list, with few exceptions, more of these issues; and the Scott catalogue in the U.S.A. has limited their listing to notations under a special department known as "Tentative Listings." (P. H. T.)

The U.S. Post Office Department issued during 1937 to the nation's postmasters 15,108,639,409 stamps in the following denominations and numbers: One-half cent, 343,241,600. One cent, 2,796,181,210. One and one-half cent, 1,320,354,600. Two cent, 2,913,355,640. Three cent, 6,276,015,970. Four cent, 109,745,100. Five cent, 245,141,000. Six cent, 247,275,650. Seven cent, 44,469,500. Eight cent, 90,906,450. Nine cent, 97,666,800. Ten cent, 227,211,750. Eleven cent, 48,509,000. Twelve cent, 46,481,000. Thirteen cent, 21,688,900. Fourteen cent, 14,699,900. Fifteen cent, 68,447,250. Sixteen cent, 7,289,900. Seventeen cent, 27,732,200. Twenty cent, 98,887,400. Twenty-five cent, 18,687,450. Thirty cent, 20,944,100. Fifty cent, 20,582,710. One dollar, 2,746,439. Two dollar, 238,200. Five dollar, 179,690.

## Philippines, Commonwealth of the.

The Philippine Islands south-east of China, entirely in the tropics; capital, Manila; U.S. high commissioner, Paul V. McNutt; president, Manuel Quezon; vice president, Sergio Osmeña; status in 1937 that of an unincorporated territory, until July 4, 1946 under constitution provided in the Tydings-McDuffie Independence Act; national assembly, unicameral. During the period of the commonwealth, all legislation affecting currency, coinage, imports, exports, and immigration requires approval of the President of the United States; the U.S. is in control of foreign affairs; and all decisions of local courts are subject to review by the U.S. Supreme Court. Area, approximately, 114,400 sq.mi.; population (estimate) over 14,000,000 (13,099,405 by 1935 estimate); basic stock, Malayan, but many blends and mixtures exist. Chinese number about 75,000 and Japanese, about 20,000.

**History.**—The constitution of the commonwealth was adopted Feb. 2, 1935; the first election was held Sept. 17. The plebiscite on woman suffrage, required by the constitution, held on April



BRITISH CORONATION STAMPS. Upper left, Great Britain; upper right, New Zealand (each Dominion issued its own designs which varied greatly); lower left, design used by 45 Crown Colonies; SPANISH REVOLUTIONARY STAMP, lower right



## DAPOSTA 1937



1. DANZIGER  
LANDESPOSTWERTZEICHEN  
AUSSTELLUNG

DANZIG—a souvenir sheet

so, 1937, resulted in affirmative vote of 447,681 as against negative vote of 44,307—all women. A joint committee of Americans and Filipinos met in Washington and later in Manila to discuss trade and economic conditions and to hold hearings relative to President Quezon's request to have the independence period shortened to July 4, 1939, and regarding the adjustments that might be necessary in the event that Congress shortened the period. The opening of the regular session of the assembly was changed from June 15 to Oct. 15. On Feb. 3-7, the 33rd Eucharistic Congress was held in Manila. The year was marked by disastrous fires, typhoons, and floods in various parts with considerable loss of life and damage to property; and an earthquake in August damaged one of the large office buildings in Manila, where office space was already at a premium. The Sakdalistas, who demand immediate independence and who are said to be communistic, were a cause for alarm on several occasions and several outbreaks occurred among the Moros. The controversy as to precedence between the high commissioner and the president was settled in favour of the former. The assembly met on Aug. 30 to consider emergency school legislation and arrange for elections in 1938. The processing tax on coco-nut oil, imposed as an export tax, amounting to about 100,000,000 pesos, was covered into the Internal Treasury. The outbreak of the Chino-Japanese war tended to bring new economic factors into the situation. Former Governor Harrison became a naturalized Philippine citizen.

**Religion and Education.**—The Filipinos proper are mostly Roman Catholics. The Moros (over 400,000) are Mohammedans; and the so-called wild peoples (over 500,000 including the Negritos) are pagans. In June, 1937, school enrolment was 1,250,000, with about 2,000,000 children of school age (or 60%) not in school. The majority of those in school do not reach beyond the fourth year. Teachers number over 28,800. Children in private schools number about 100,000 and enrolment in the University of the Philippines is in excess of 6,000. High school, college, and university education is given in various institutions, church and secular. About 27% of government revenues goes to education.

**Army and Navy.**—The army (organized by Major General Donald MacArthur) is conscriptive, consisting of a reserve force of citizen soldiers between the ages of 21 and 50. The first class of

20,000 was conscripted on Jan. 1, 1937, and the second on July 1. There is also a small regular force, which will eventually reach some 930 officers and about 10,000 men. This force will take over the police duties now performed by the Philippine constabulary. The army is purely one of defence and no real navy is planned.

**Finances.**—The standard of value is the peso (equivalent to 50¢, U.S.). Estimated budget figures for 1937 were: receipts, 65,817,400 pesos; expenditures, 64,767,138 pesos. Those for 1938 (passed by the assembly in 1937) were: receipts, 80,400,000 pesos; expenditures 76,300,000 pesos. The cedula or poll tax was abolished in 1937 when the total receipts from taxation were estimated at 51,122,000 pesos. The public debt on Dec. 31, 1936, was approxi-

mately 91,161,000 pesos. Monetary circulation, as of May 30, 1937, was approximately 149,152,000 pesos; and total coinage in circulation and in the treasury, approximately 41,085,253 pesos.

Monthly averages in 1936 of debits to individual accounts in banks were approximately 39,291,000 pesos, and for the first five months of 1937, 48,278,000 pesos. Total business of insurance companies (exclusive of life) amounted in 1936 to approximately 1,282,124,000 pesos; and life insurance in force Dec. 31, 1935, approximately 148,974,000 pesos.

**Trade and Communication.**—The value of domestic trade (gross sale of merchants, manufacturers, and peddlers) for 1936 and the first four months of 1937 was 825,680,000 pesos and 290,213,000 pesos respectively. The value of exports and imports for the first nine months of 1937 was 245,695,000 and 157,891,000 pesos respectively, these figures representing increases of about 5 and 13% over the first nine months of 1936. Chief exports for the first nine months of 1937 in millions of pesos were: sugar, 102,655; abaca (Manila hemp), 35,646; coco-nut oil, 31,129; lumber and timber, 6,524; and iron ore, 2,122.

Chief classes of imports in millions of pesos were: cotton goods, 25,922; iron and steel, 16,443; and machinery, 10,193. The United States took by far the greatest proportion of exports and was the major importer with Japan second in both.

During 1936, monthly carloading averaged 105,598 tons and for the first four months of 1937, 240,905 tons. Steamship averages for the same periods were respectively 347,578, and 305,193 tons. On Jan. 1, 1937, there were 28,420 automobiles and 17,355 motor trucks. On the same date, roads of the first, second, and third class were approximately 9,556; 5,165; 2,088 km., respectively. Approximately 159,581,000 pesos are invested in land transportation and 8,755,700 pesos in telephones. Radio control is vested in a radio board created by an act of Oct. 22, 1936. Air service is provided by the Pan American Airways, the Philippine Aerial Taxi Co., and the Iloilo-Negros Air Express Co. The first-named company inaugurated commercial air service between Manila and Hongkong, April 28, 1937. The government released 500,000 pesos toward the construction of an aeroplane basin and national airport in Manila Harbor; and a Bureau of Aeronautics was established Nov. 12, 1936.



**Natural Resources.**—Forest and agricultural products, minerals (especially gold), and fisheries are among the principal natural resources. On Jan. 1, 1937, the capital invested in the lumber industry was approximately 29,387,000 pesos, and the production of 1936 approximately 1,928,000 cu.m. (about 811,303,000 board ft. being cut from public forests). Principal agricultural crops in 1936 were: rice, 118,837,200 pesos; maize, 15,713,900 pesos; sugar cane, 111,593,500 pesos; coconuts, 61,975,500 pesos; abaca, 19,641,300 pesos; tobacco, 3,729,300 pesos; maguey, 816,700 pesos; bananas, 8,037,600 pesos; and rubber, 481,400 pesos. Gold production for 1936 amounted to 633,126 fine ounces valued at 44,318,742 pesos; and for the first four months of 1937, 58,506 fine ounces valued at 4,095,457 pesos. New workings were undertaken at the Baguio mines and new rich deposits were discovered in Mindanao, the latter occasioning a gold rush. Chromite deposits are now being exploited successfully and export has begun. Annual exports of iron ore from Luzon, Mindanao, and Samar reach over 300 tons, most of which go to Japan. Over 600,000 tons of cement were manufactured in 1935 for insular consumption. Other minerals (coal, copper, and manganese) have little or no market.

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**Philosophy.** The most important event of the year has been the ninth international Congress of Philosophy, which met in Paris during August. The congress had a membership of about 800, about a third of whom contributed papers, and many more took part in the various discussions. A notable feature of the meeting was the presence of a large number of priests and other clerics, a fact which may be regarded as evidence of the growing *rapprochement* between philosophy and religion in recent years. The congress resolved itself into six sections, which dealt respectively with the following groups of problems: (1) the present position of Cartesian studies; (2) the unity of science, and the methods of science; (3) logic and mathematics; (4) causality and determinism in physics and biology; (5) reflective analysis and transcendence; (6) value and reality. Prominence was given to the philosophy of Descartes in honour of the 300th anniversary of the publication of his *Discours de la Méthode* (1637), which is probably still the most popular introduction to the study of philosophy.

Various other philosophical conferences were held in 1937, and some of them are enumerated here in chronological order. In March, the Southern Society for Philosophy and Psychology met in Columbia, South Carolina. In April, the western division of the American Philosophical Association held a meeting at Galesburg, Illinois. During May, there was a special conference, in New York city, on methods in philosophy and science. In July, the Aristotelian Society of London and the Mind Association had a joint meeting in Bristol. In August, the second international Congress of Aesthetics met in Paris, immediately after the conclusion of the ninth international Congress of Philosophy. In December, the eastern division of the American Philosophical Association held a meeting at Princeton.

As usual, a considerable portion of the philosophical literature of the year was devoted to various aspects of the history of philosophy, including new expositions of the teachings of the great philosophers. Platonism is the theme of a number of new books. There is *Plato's Conception of Philosophy*, by H. Gauss. *Plato's Cosmology*, by F. M. Cornford, contains a translation of the *Timaeus* with a running commentary, and is a valuable companion to *Plato's Theory of Knowledge*, by the same editor. In G. E. Mueller's *What Plato Thinks*, and R. H. S. Crossman's

*Plato To-day*, Plato is, so to say, represented in modern dress. Such attempts to give life to ancient thinkers are quite plausible, and are not without historical precedent. In his *Phaedon*, for instance, Mendelssohn made Plato's Socrates speak like a philosopher of the 18th century.

Of books on later Greek philosophy, mention may be made of D. R. Dudley's *History of Cynicism*. Mediaeval philosophy is represented by J. Ritter's *Mundus Intelligibilis*, which gives an account of St. Augustine's Ontology, and by E. Agnagine's *Pico della Mirandola*.

Turning to the modern history of philosophy, Descartes has received special attention on account of the tercentenary of his *Discours de la Méthode*. The Bibliothèque Nationale in Paris held a special Descartes exhibition, organized by Ch. Adam and others. It contained over 900 exhibits of books,



MANUEL QUEZON, first president of the Commonwealth of the Philippines

manuscripts, medals, pictures, and portraits relating to the life, work, and influence of Descartes. The French Government issued a special postage stamp with a portrait of the philosopher. The *Revue de Métaphysique et de Morale* and the *Revue Philosophique* devoted each a special number to Cartesian philosophy; the *Rivista di Filosofia Neo-Scolastica* issued a special supplementary volume; and numerous articles on Descartes appeared in many other periodicals. There have also been published a number of books on Descartes: Léon Brunschvicg's *Descartes*; H. Gouhier's *Essais sur Descartes*; K. Jasper's *Descartes*; and F. Olgiati's *La Filosofia di Descartes*.

As regards books on other modern philosophers, Bertrand Russell's *Critical Exposition of the Philosophy of Leibniz*, is particularly welcome in view of the growing interest in mathematical logic, of which Leibniz was one of the founders. In a new preface, the author describes, with justifiable satisfaction, how his principal thesis, namely, that Leibniz had based his philosophy on his logic, has received ample confirmation from Louis Couturat's *La Logique de Leibniz*, and his edition of certain literary remains which had been overlooked by previous editors of the works of Leibniz. According to Russell, Leibniz had two philosophies: a logical philosophy leading to Spinozism—correct but indiscreet at that time; and an illogical philosophy—vulgarized, but successful in winning the admiration of princes and princesses. As Leibniz grew older, he kept his sound philosophy more and more to himself. Other books on modern philosophers are: R. I. Aaron's *John Locke*; C. Maund's *Hume's Theory of Knowledge*; G. Le Roy's *Maine de Biran*; L. Prat's *Charles Renouvier*; A. H. Murray's *The Philosophy of James Ward*; and R. M. Loomba's *Bradley and Bergson*.

The problems which received the greatest attention in the philosophical literature of 1937 were those commonly grouped under "philosophy of science." Of the numerous papers read at the ninth international Congress of Philosophy, the papers devoted to these problems aroused the widest interest. They included



papers by the brothers L. and M. de Broglie, Barzin, Enriques, Pos, and Reichenbach, dealing with causality, determinism, probability, empiricism, and rationalism, etc. The same problems also constitute the theme of a number of important books which have been published during the year. Ernst Cassirer's *Determinismus und Indeterminismus in der Modernen Physik* is a valuable companion to the same author's *Substance and Function*, and should likewise be made accessible to English-reading students of philosophy. Physicists who identify indeterminism with moral freedom will do well to study the closing section of the new book. Bertrand Russell's *Principles of Mathematics* has made a welcome re-appearance with a new and long introduction, in which the author explains some changes in his views, and defines his attitude towards the views of Hilbert, Weyl, Wittgenstein, Carnap, and others. The book is most opportune, as R. Carnap's *Logical Syntax of Language* has just appeared in English dress, and will help to enliven the debate between those who (like Carnap) regard the logic of science as "a matter of linguistic choice," and those who (like Russell) do not. Other noteworthy books in this connection are G. Bachelard's *L'expérience de l'espace dans la physique contemporaine* and A. C. Benjamin's *Introduction to the Philosophy of Science*. Of books on general philosophy the most notable are: *Personal Realism*, by J. B. Pratt, one of the founders of critical realism; *Nature and Mind*, by F. J. E. Woodbridge; *Structure and Reality: A Study of First Principles*, by D. W. Gotshalk; *Being and Being Known*, by W. C. Swabey; and *Beyond Humanism*, by C. Hartshorne.

The philosophy of religion has not been neglected in 1937, and a few interesting books have been published. W. G. de Burgh, in his *Towards a Religious Philosophy*, discusses the general problem in a competent and persuasive manner. The new volume of Hibbert lectures, *The Philosophical Bases of Theism*, by G. Dawes Hicks, deals with the special problems of Theism in relation to Pantheism, in a learned yet readable way, and seeks to put new wine into old bottles by an interesting re-interpretation of the old cosmological, teleological, and axiological arguments. The author's philosophical temperament shows itself in his high estimate of calm, rational reflection, as compared with the ecstasy that is so commonly taken or mistaken for religious experience. A more limited problem is considered by W. Kingsland's *Gnosis, or Ancient Wisdom, in the Christian Church*. With much patience and ingenuity the author attempts to unravel the Gnostic and kindred elements in Christianity, apparently for the special benefit of Theosophists.

The comparative study of the philosophical systems of different peoples is rather uncommon, perhaps on account of its intrinsic difficulty. However, a part of this difficult task has been courageously attempted, and accomplished with a considerable measure of success, in *Indian and Western Philosophy* by Betty Heimann.

**Phoenix Islands:** see PACIFIC ISLANDS, BRITISH.

**Phosphates.** Mineral phosphates, chiefly phosphate rock, a phosphate of calcium, are basic fertilizer material, and as such support an extensive producing industry. A world production of 11,760,000 metric tons in 1930 declined to 10,694,000 tons in 1932, and recovered to 10,300,000 tons in 1936. The United States is the leading producer, with 33% of the total, followed by the Soviet Union 15%, Tunis 15%, French Morocco 12%, Ocean and Nauru islands 8%, Algeria 5%, and Egypt 5%. These seven countries account for 93% of the total, and the remaining 7% is scattered among about 30 others. The general producing area in northern Africa, including Tunis, Morocco and Algeria, contributed 32% of the 1936 total, and 50% in 1930,

none of these countries having made material recovery from the depression drop. Although both Egypt and Ocean and Nauru islands suffered only a minor decline, and have recovered to a level well above that of 1930, the Russian output is the only one which has shown an exceptional growth, increasing steadily from 200,000 tons in 1930 to 1,498,000 tons in 1936. The United States output of 3,989,000 tons in 1930 dropped to 1,734,000 tons in 1932, and rose to 3,406,000 tons in 1936. About one-third of the output is exported.

(G. A. Ro.)

**Photography.** The year 1937 showed a growth of activity in the photographic field not equalled for many years past. The motion picture, commercial and amateur branches, was particularly affected. New photographic magazines appeared almost every month, and unprecedented use of photography was made in newspaper and magazine illustration. The most significant step was the establishment of colour photography as a prominent part of the industry, and the conclusion is justifiable that 1937 can be regarded as the beginning of a new era in which colour will largely replace black and white.

**Motion Pictures.**—Total theatres in the world approached 100,000, more than half of which were wired for sound. The attendance at theatres increased more than 10% over 1936. Anxiety over the possible effects of television were partially allayed by a second report of the Academy of Motion Picture Arts and Sciences. It is considered improbable that television will burst on an unprepared cinematograph industry; enormous sums must be spent before widespread urban exploitation of television becomes possible even in the United States. Television service for rural areas is beyond the calculable future. Much activity was shown in England and Germany, but the opinions concerning the development in the United States apply also to these countries. However, improvements in 1937 in the design of electronic projection devices give promise of considerable enlargement of television screen area, the realization of which would vastly accelerate the evolution of television as a practical art.

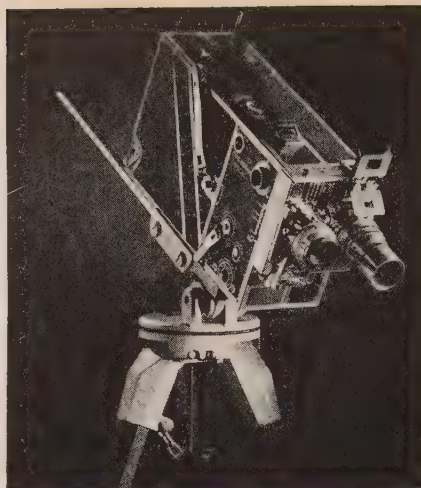
Improvement in the quality of sound films resulted from the use of recording by ultra-violet radiation, and of special fine grain films for white light recording. Improved high frequency response, better wave form, and lower ground noise were attained. Although not new in 1937, the use of push-pull sound recording increased considerably during the year. The first public demonstration of stereophonic sound was given in New York, using twin sound tracks reproduced through separate channels by loud speakers located at each side of the screen. A number of demonstrations of stereoscopic motion pictures in colour were given, using polarizing screens. Although stereoscopic photography still has considerable appeal, no process is yet available for theatre use which does not have the disadvantage of requiring individual optical viewing devices.

For the lighting of studio sets, increased use of arc lamps was noticed. They are employed exclusively for technicolour films, in conjunction with straw coloured filters for some lights which are too blue in colour. Although a somewhat higher level of illumination is required for colour as compared with black and white, it has been much reduced during the year, and, in fact, in some cases it has been brought down to approximately the level used for a great deal of black-and-white work. New incandescent filament high-wattage lamps were developed in different types, all operating at the same colour temperature, because uniform colour quality of all types of lamp is essential for colour photography. New fine grain negative and positive duplicating films were made available to give duplicates of a quality not obtainable before. Towards the end of the year, panchromatic negative film of exceptionally high speed was beginning to be used. Infra-red

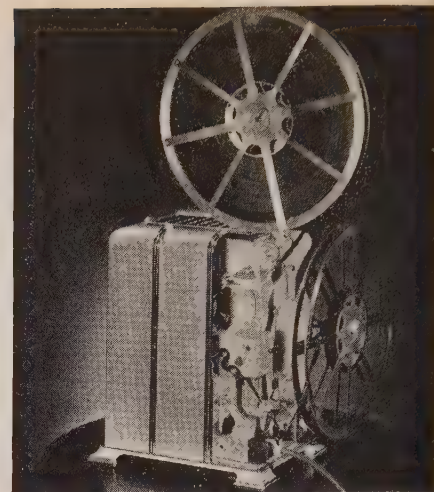




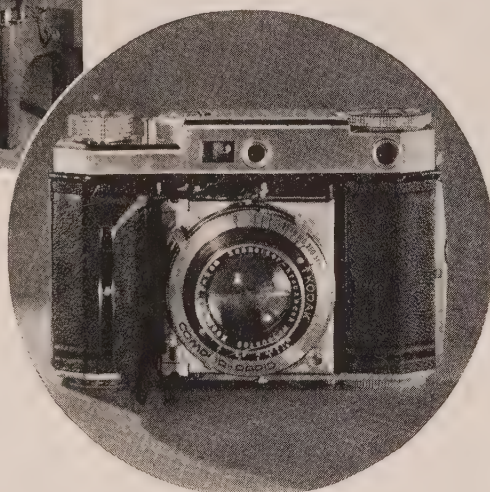
A CAMERA FOR COPYING BOOKS with 35 mm. film, the Eastman Microfile Recordak Type A; the inventor, Mr. R. S. Hopkins is seated beside it



A 16 MM. MOTION PICTURE CAMERA, the Ciné-Kodak Special for scientific and advanced amateur motion picture photography

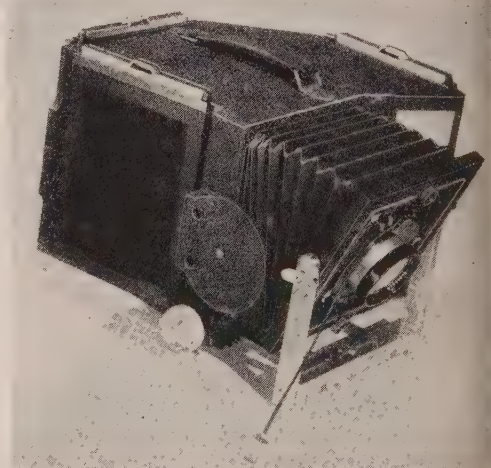


A HIGH QUALITY 16 MM. SOUND FILM PROJECTOR, the Sound Kodascope Special



A NEW MINIATURE CAMERA, the Kodak Retina II

THE DEVIN TRICOLOUR ONE EXPOSURE CAMERA—a Two Mirror Camera for Making Three-Colour Separation Negatives with one Exposure



film was increased in speed and was used to an increasing extent for special effects in photography, particularly for simulating night scenes by daylight. Metro-Goldwyn-Mayer's film, *The Good Earth*, was entirely toned brown by uranium, marking a change in screen quality which was soon followed in other films.

**Colour Photography.**—The year 1937 was notable for a great increase in the use of colour photography in the motion picture and amateur fields, and for commercial advertising and illustration. The technicolour three-colour subtractive process was used practically exclusively for colour films shown in the theatres. The Disney technicolour film, *Snow White and the Seven Dwarfs*, was the first feature-length colour cartoon and was regarded as one of the outstanding achievements of the motion picture art. A new camera was employed to ensure proper relative size of background objects, to illuminate various planes in a scene individually, and to achieve soft-focus effects on the backgrounds. The quality of technicolour films showed a marked superiority over the films of former years. The coronation procession of King George VI was photographed in technicolour and dufaycolour.

Still colour photography was employed to a much greater extent in the commercial field as compared with previous years. In most cases, the original photographs were made as three-colour

separation negatives in one-exposure mirror cameras, although for still life subjects, the repeating back or even the normal camera was much used. Plates and films giving direct colour transparencies were used to some extent for magazine illustration. Those in most common use were dufaycolour, finlaycolour, and kodachrome. Dufaycolour, increased in speed and improved in quality, was applied to some extent to geographical illustration, but mainly by Hollywood motion picture studios, to provide colour transparencies for magazine originals. Finlaycolour continued to be used for geographical and commercial illustration. In general, however, there was a decline in interest in screen unit processes. The kodachrome monopack three-colour subtractive film forged ahead as a medium for commercial work, general illustrative purposes, and lantern slides for lectures and display. The light sources used for still colour photography were confined to daylight, high efficiency tungsten lamps, and flash lamps. No printing process was available by which colour transparencies could be printed on paper in a single step to give good colour prints, but such prints were made commercially in large numbers from separation negatives. Most prints were made by the carbro process, but the recently introduced Eastman wash-off relief process found increasing application. Other printing processes used to a small



extent were dyebro, belcolour, and defender chromatone.

The colour process most used by amateurs was kodachrome, in 35mm. width in miniature cameras, and as 16mm. and 8mm. film in substandard motion picture apparatus. In the United States, about one-half of the amateur motion picture films were made in colour. In Germany, the agfacolour process was introduced for miniature and amateur motion picture cameras. It employs a three-layer film based on the principle described some years ago by Fischer, in which dye coupling components are incorporated in the emulsion.

**Documentary Films.**—Outstanding progress was made in 1937 in the application of photography to the copying of documents. Many types of camera and projector were available for photographing and viewing printed material, commercial documents, etc., on 16mm. and 35mm. film. Particular interest was shown by libraries in making film copies of rare books available elsewhere as originals. About 40 American newspapers file film copies of their daily issues, and copies were made on film of pension cards and the U.S. census cards of 1880. Documents are photographed on film with safety base, and tests made at the Bureau of Standards showed that they should be as durable as printed material on rag paper. They occupy about one-fifth of the space of the original documents, when made on 35mm. film.

**Miniature Photography.**—The interest shown in recent years in cameras taking small film—6 cm. or less, usually 35mm. in width—continued through 1937. Cameras available range from very cheap models with fixed focal lenses to advanced models with high aperture lenses, range finders coupled with the lens focusing devices, automatic film winds, very rapid shutters, and interchangeable lenses and auxiliary attachments permitting extreme flexibility. The cameras are much used by press, commercial, and particularly advanced amateur photographers. The cameras are often used in extremely poor lighting conditions, for which extremely fast films are required, and the negatives are frequently enlarged to considerable magnification, necessitating the manufacture of films of very fine grain and of processing solutions which assist in its attainment. Many formulas have been proposed for fine grain development.

Most of these contain paraphenylene-diamine as the effective reducing agent, but attempts have been made to evolve formulas which do not require the use of this material, which produces marked dermatitis with many users.

**Special Applications.**—There was no important novel development in X-ray photography, although there was a notable general improvement in materials and technique. Chief of these was increased definition associated with extensive use of direct X-ray film, finer grained intensifying screens, and rotating target tubes. Marked interest was shown in the use of X-ray cinematography, and improvement in technique resulted in both the direct and fluorescent screen methods. Industrial radiographers benefited from a study of the characteristics of lead intensifying screens by Seeman. Radiography using ultra-soft X-rays, developed particularly by Sherwood, has found many applications in the realms of biology, paper and textile technology, and the examination of works of art.

Aerial photography continued to be the chief implement of the topographical surveyor, and enormous quantities of film were used in a number of large projects, particularly in soil conservation studies of large areas in the United States. It was also employed in increasing extents in forest and geological survey, and survey for pipe and electric power transmission lines, in addition to map revision.

New films for aerial photography included a fast infra-red film, a new panchromatic film of increased speed and contrast, and a special orthochromatic film for distinguishing scrub from sand,

and such purposes. Films for topographical survey are usually made on low shrinkage support, and during 1937, printing papers having similar characteristics were made available.

Photography is one of the primary weapons of the astronomer. In 1937, photographs were made which resulted in the discovery of infra-red radiation in interstellar space. Plates very sensitive to the extreme red were used in the investigation of stars normally invisible through nebular haze. Photographs made by Major A. W. Stevens from high altitudes during the 1937 solar eclipse gave evidence that the corona was globular in shape.

Increased use was made of telegraphic means of transmitting pictures for press purposes, and portable apparatus was produced for use in the field. High speed photography, either as still or motion picture photography, was rapidly becoming an important means of study in technological and scientific fields. New fast films were made to meet the increasing demands of press photographers. The importance of photography as a means of general illustration was clearly evident from a sudden increase in the number of picture periodicals.

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(C. E. K. M.)

**Physics.** Nuclear physics was very popular as a subject for research in 1937. The emission of electrons and positrons by the nuclei of radio-active atoms was studied by several physicists with the object of testing Fermi's theory. Previous results made the number of electrons emitted with low kinetic energies much smaller than Fermi's theory predicted. H. O. W. Richardson and Alice Leigh-Smith devised a new method and obtained results which support Fermi's theory and show that the earlier results were erroneous. Richardson put a small quantity of the radio-active element, in the form of a gaseous compound, into a C. T. R. Wilson expansion chamber and obtained photographs of the tracks made by the electrons emitted by the radio-active gas atoms. This new method shows up the short tracks made by the low energy electrons which were difficult to count by the older methods which required the electrons to pass through a thin plate into a detecting apparatus. The thin plate stopped most of the low energy electrons and it was difficult to determine the fraction stopped. Richardson's results show that there are many more low energy electrons emitted than the older experiments indicated and so support Fermi's theory.

Another important result in nuclear physics obtained in 1937 was the discovery of nuclear isomers. Atoms with the same atomic number, that is, with equal nuclear charges and identical chemical properties, but with different atomic weights, are called isotopes and have been known to exist for many years. Atoms with the same atomic numbers and also with equal mass numbers, that is, with very nearly equal atomic weights but different nuclear properties, are called nuclear isomers and their existence was unexpected although it was suggested a long time ago that uranium  $X_2$  and uranium  $Z$  may be nuclear isomers. This discovery may be compared with the discovery of chemical isomers, that is, compounds of the same composition but different properties, by Wöhler about 1830. The existence of nuclear isomers probably shows that the protons and neutrons in a nucleus are arranged in a more or less rigid pattern with connections or bonds between them just as the atoms in a molecule are arranged. If the protons and neutrons were moving about in the nucleus like the molecules in a drop of water, it is difficult to see how nuclei with equal numbers of neutrons and protons like the nuclear isomers could have different nuclear properties.



The existence of nuclear isomers was first clearly shown by A. H. Snell. He showed that the radio-active isotope of bromine of atomic weight 80 can exist in two forms. The beta activity of one form decays to half value in 18 min. and that of the other in 4 to 5 hours. This isotope can be obtained by four different nuclear reactions. Bromine of atomic weight 79 or  $\text{Br}^{79}$  when bombarded by neutrons combines with a neutron, emits gamma rays and is changed to bromine of atomic weight 80 or  $\text{Br}^{80}$ . This reaction is conveniently represented by  $\text{Br}^{79}(\text{n}, \gamma) \text{Br}^{80}$ . The first symbol in the bracket indicating the body absorbed and the second the body emitted. The other three reactions are  $\text{Br}^{79}(\text{D}, \text{p}) \text{Br}^{80}$  where D denotes a deuteron or heavy hydrogen nucleus and p a proton,  $\text{Br}^{81}(\text{n}, 2\text{n}) \text{Br}^{80}$ , where n denotes a neutron, and  $\text{Br}^{81}(\gamma, \text{n}) \text{Br}^{80}$ . The third reaction in which one neutron is absorbed and two emitted is a new type of nuclear reaction.

The following table shows all the different types of nuclear reactions known at present. Z is the atomic number equal to the number of protons in the nucleus so that the nuclear charge is Ze and A is the mass number so that the atomic weight is approximately equal to A.

Incident Particle	Emitted Particle	Z becomes	A becomes
Alpha . . . . .	Proton . . . . .	$Z+1$	$A+3$
Alpha . . . . .	Neutron . . . . .	$Z+2$	$A+3$
Proton . . . . .	Alpha . . . . .	$Z+1$	$A+1$
Proton . . . . .	Neutron . . . . .	$Z-1$	$A-3$
Proton . . . . .	Deuteron . . . . .	$Z+1$	A
Deuteron . . . . .	Proton . . . . .	Z	$A-1$
Deuteron . . . . .	Neutron . . . . .	$Z+1$	$A+1$
Deuteron . . . . .	Alpha . . . . .	$Z-1$	$A-2$
Deuteron . . . . .	Two neutrons . . . . .	$Z+1$	A
Neutron . . . . .	Proton . . . . .	Z	$A+1$
Neutron . . . . .	Alpha . . . . .	$Z-1$	A
Neutron . . . . .	Two neutrons . . . . .	$Z-2$	$A-3$
Neutron . . . . .	Three neutrons . . . . .	Z	$A-1$
Neutron . . . . .	Gamma Ray . . . . .	Z	$A-2$
Gamma Ray . . . . .	Neutron . . . . .	Z	$A+1$
			$A-1$

The existence of unstable or radio-active nuclear isomers suggests the possibility of the existence of stable nuclear isomers. Stable nuclear isomers would be atoms with equal values of Z and A but slightly different atomic weights and different nuclear properties. For example we should expect them to have different target areas for disintegrations due to collisions and to emit particles with different energies when disintegrated. An element consisting of a mixture of such stable nuclear isomers would give a mass spectrum with lines having a fine structure, that is, very narrow groups of lines instead of single lines. Nothing of the sort has so far been observed, possibly because the resolving power of mass spectrographs is not great enough to separate the lines in the very narrow groups.

Investigations on the collisions between neutrons and protons were published in 1937 by Bonner and others. It was found that the distribution of the particles after the collision was symmetrical with respect to the centre of mass of the two particles. This shows that the interaction between a neutron and a proton is not appreciable at distances comparable with the de Broglie wave length of these particles. Previous results had made the distribution very unsymmetrical.

**Cosmic Rays.**—Several important papers on cosmic rays appeared in 1937. Julian L. Thompson, using the results obtained by A. H. Compton and Turner on the variation of cosmic ray intensity with latitude on 11 trips between Vancouver, B.C., and Sydney, Australia, from March 1936 to January 1937, showed that the intensity has a small daily variation. The maximum intensity is at about one P.M. and the minimum at about one A.M. The

daily variation is about .5%. Previous results had suggested such a small daily variation but were not conclusive. It seems probable that the sun emits some cosmic rays.

Blackett photographed more than 800 tracks made by cosmic ray particles in an expansion chamber in a magnetic field of 12,000 to 14,000 gauss. He found that slightly more than half (53%) of the rays were positively charged. The energy spectrum showed anomalies in the neighbourhood of  $2.5 \times 10^9$  electron volts, that of the negative particles showing a marked minimum at this energy. Particles with energies greater than  $2 \times 10^{10}$  electron volts were observed. The observed energy spectra were interpreted as being the absorption spectra of the cosmic rays in air. It was shown that a cosmic ray has a chance, about one in two, of being absorbed in air, presumably by shower formation, while passing through an energy range near  $2.5 \times 10^9$  electron volts. Blackett found that about 15% of the more penetrating cosmic rays at sea level may be protons, and considered it possible that all the primary rays above the atmosphere may be protons, some perhaps negative protons. Blackett, also found that for energies between 0 and  $3 \times 10^9$  electron volts the energy loss is several times greater than that due to ionization of the air, between  $3 \times 10^9$  and  $10^{10}$  about equal to the ionization loss and between  $10^{10}$  and  $2 \times 10^{10}$  electron volts again several times greater than the ionization loss. The excess energy loss over the ionization loss is due to radiation and shower production.

Bowen, Millikan and Neher measured the cosmic ray intensity with Neher electroscopes at different heights at Madras, India, where the magnetic latitude is only  $3^\circ$  N. They found that the intensity has a maximum value at a height such that 90% of the atmosphere is below and 10% above. With 98% of the atmosphere below the electroscope the cosmic ray intensity was about 65% of that at the maximum. The differences between these results and those previously obtained further north give the variation with height of the field sensitive part of the cosmic rays. The field sensitive part of the cosmic rays are the rays deflected by the earth's magnetic field which are stopped by the field near the equator but not further north. The results show that the field sensitive rays get into equilibrium with their secondary rays after traversing not much more than 10% of the atmosphere.

Anderson and Neddermeyer and also Street and Stevenson have photographed many cosmic ray tracks in a magnetic field and believe that there is evidence for the existence of a new particle with mass between those of the proton and electron. This quite unexpected result, if confirmed will be of fundamental importance. The tracks, believed due to the new particle, had about six times as many droplets per cm. as electron tracks and so were like proton tracks. However, the curvature of the tracks was too great for proton tracks because a proton with the observed curvature would have had far too little energy to make tracks of the observed length. The velocity of the particles was estimated from the number of droplets in the track assuming this to vary inversely as the velocity squared and so the mass of the particles was found to be about 130 times that of an electron or about 13 times less than the mass of a proton. The new particle is supposed to have the same electric charge as an electron. Jauncey has suggested that such particles could be formed by the combination of an electron and a photon of sufficient energy. The energy of the photon would have to be greater than 65,000,000 electron volts, but photons of such high energy may be present in cosmic rays.

The existence of this new particle has been confirmed by Nishina, Takenchi and Ichimiya in Japan. They observed a cosmic ray track for which the product of the magnetic field strength and radius of curvature was equal to  $7.4 \times 10^5$  and after passing through 3.5 cm. of lead became  $4.9 \times 10^5$ . Assuming the loss of energy in the lead to be all due to ionization these results indicate



a particle with mass about  $1/10$  that of a proton. They consider that the highly penetrating cosmic ray particles are all, or nearly all, these new particles with very few, if any, protons or electrons.

**Mechanical Developments.**—A new form of high potential generator has been constructed at the University of Wisconsin by Herb, Parkinson and Kerst and generators of more or less similar design are in process of construction at several other places. This generator is contained in a steel tank  $20 \times 5\frac{1}{2}$  feet. Near the centre of the tank a metal cylinder is supported on a long tube of textolite, which is an insulator and is attached to the ends of the tank. The insulated cylinder is charged by means of two rubber belts running on pulleys. Each belt has a pulley inside the cylinder and another at the end of the tank which is driven by a motor. The belts are charged with electricity at the end of the tank and carry the charge to the insulated cylinder. In this way the cylinder can be charged until the air between it and the tank breaks down. With the air in the tank at 100 lbs. per sq.in. pressure, the cylinder can be charged to a potential of about 2,500,000 volts. A long vacuum tube extends from the cylinder to the end of the tank opposite the pulleys and positive ions from an ion source in the cylinder are driven down the vacuum tube by the potential difference. The ions can be used to bombard targets of different elements and the resulting nuclear reactions studied.

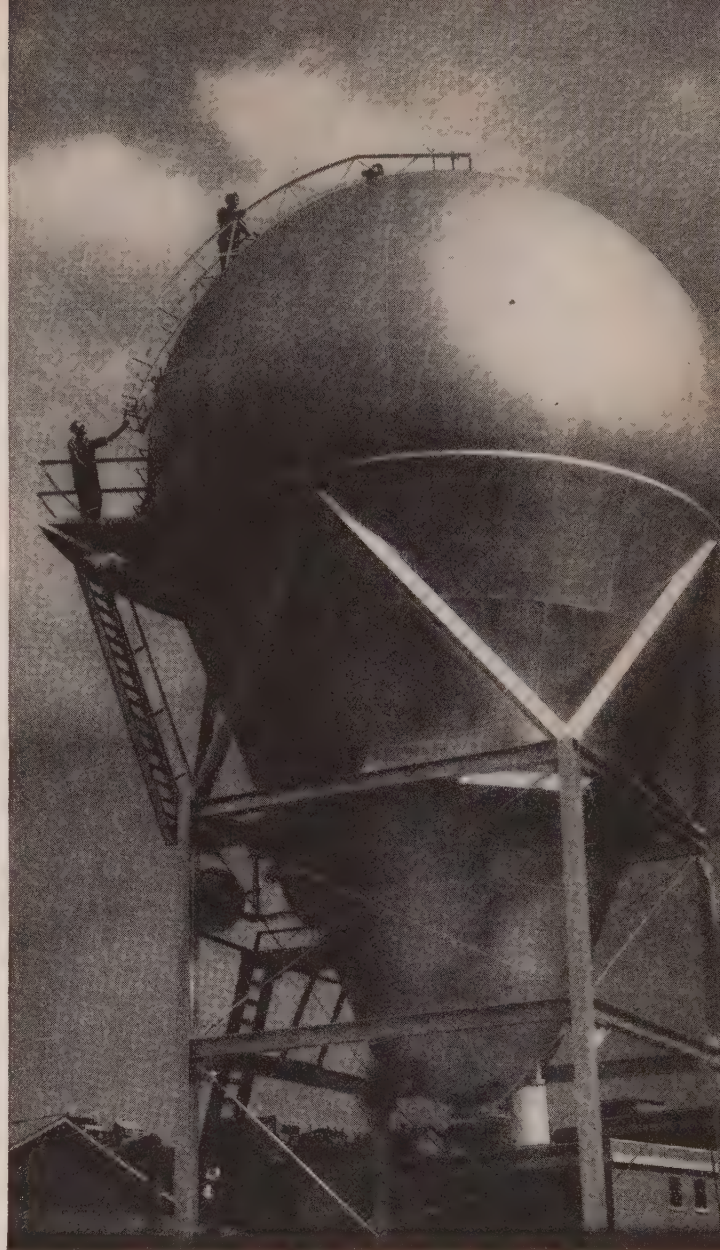
At the University of California a new cyclotron is being constructed which is expected to give positive ions with about 50,000,000 electron volts energy. The magnet for this cyclotron will weigh over 200 tons and the whole apparatus will cost nearly \$200,000. The high energy positive ions will be used to study nuclear reactions and to produce radio-active elements which may be useful for medical purposes.

About a dozen large cyclotrons with magnets weighing up to 100 tons are being constructed at other places in America and Europe.

A great many papers on the properties of neutrons were published in 1937. It has been shown that neutrons probably have a negative magnetic moment of about two nuclear magnetons. Neutrons in bodies containing hydrogen at extremely low temperatures do not give energy to the hydrogen if the energy of the neutrons is less than that required to move a hydrogen atom from its state of lowest possible energy (ground state) to its first excited state in the body.

A very exact new determination of the specific charge of electrons or  $e/m$  was published in 1937. It was found that  $e/m = 1.760 \times 10^7$  electromagnetic units per gram. The value of the electronic charge  $e$  is now believed to be  $4.80 \times 10^{-10}$  electrostatic units so that the mass of one electron is  $9.10 \times 10^{-28}$  gram. The oil drop method and X-ray crystal lattice method now both give  $e = 4.80 \times 10^{-10}$ . The oil drop method depends on the viscosity of air and the value of the viscosity used in getting Millikan's old oil drop value  $4.77 \times 10^{-10}$  has been found to be slightly in error. (H. A. W.)

**Physics, Institute of.** The 2nd conference on industrial physics was held in Birmingham University in March, the subject being "Optical devices in research and industry." There was an exhibition of instruments and apparatus. Various branch meetings were held, and a symposium by the Manchester branch on magnetism was published in book form. The institute has been in touch with the postmaster-general concerning proposed legislation regarding electrical interference with broadcasting. Arrangements have been made for placing students registered with the institute in industrial laboratories in order to give them first-hand experience of physics in industry.



PRESSURE TANK, East Pittsburgh, Pa., 47 feet high and 30 feet in diameter for physicists' experiments in disintegrating the nuclei of atoms

**Physiology.** The close dependence of physiological progress upon progress in other sciences, and particularly in physics and chemistry, continues to be apparent, and a large part of the factual matter and theoretical basis of modern physiology extends into the domains of biochemistry and biophysics. Investigations into the nature of the process whereby the activities of organs are controlled by nerves have aroused widespread interest. As an example, the heart, though able to beat quite independently of its nerves, receives a double nerve supply, the vagus and the sympathetic, the two supplies having functions approximately opposed to one another. The vagus nerve is inhibitory, and when stimulated causes the heart to stop or at all events to slow down its rate of beating. Conversely, the sympathetic supply when stimulated leads to an increased rate and force of beat. It was shown by Loewi in 1921 that when the vagus of a frog's heart was stimulated a substance was given off into the perfusion fluid which when administered to another heart caused it likewise to slow or stop. Similarly, when the sympathetic supply was stimulated, an accelerator substance was released and could be detected by its effect on a second heart. Many researches have sprung up in consequence of this demonstration of what was called the "humoral transmission of nerve



action." The close similarity between the properties of the "vagus substance," released from the heart by vagus stimulation on the one hand, and acetyl choline on the other, soon led to the discovery of their identity. Acetyl choline is of immense potency, one 100 millionth of the body weight producing definite effects. It was further shown that acetyl choline is liberated, not only at the heart, but in all places supplied by the parasympathetic nervous system when the nerves of that system are stimulated. It might be anticipated, therefore, that when one parasympathetic nerve anywhere in the body was stimulated, the acetyl choline carried away from that part by the circulating blood would cause the effect to reverberate in the form of general parasympathetic excitation all over the body. This is not the case, however, because there is an enzyme in the blood choline esterase, which rapidly hydrolyses the acetyl choline into the relatively inert substances acetic acid and choline. Thus the acetyl choline only acts at the site of its liberation, the finely branched nerve endings, and is then rapidly destroyed. It may, however, be spared from destruction by the previous addition to the blood of eserine in small concentrations, since that substance inhibits the activity of the choline esterase. In an animal previously dosed with eserine the results of local parasympathetic excitation become generalized and long lasting.

The substance produced by sympathetic stimulation is similarly liberated on excitation at nearly all sites supplied by the sympathetic nervous system, and closely resembles adrenaline in its physiological properties. Adrenaline, the hormone produced by the medulla of the suprarenal body, has long been known to be liberated into the blood-stream, with resultant generalized effects, resembling those of activity of the whole sympathetic nervous system, when the splanchnic nerve is stimulated. What happens in the suprarenal medulla is thought by many to be merely a copy on a gigantic scale of what occurs at all ordinary sympathetic terminals when they are stimulated. Cannon and the Harvard school, however, are of the opinion that "sympathin," as they call the sympathetic mediator, exists in two forms, one causing the excitatory effects and one the inhibitor, and is not identical with adrenaline. Whatever its nature, the mediator is relatively stable in the blood, so that generalized sympathetic activity of some degree often results from localized sympathetic excitation.

A further step was taken when it was demonstrated that in certain ganglia acetyl choline was set free when nervous impulses passed the junction, or synapse, connecting one relay or neuron with the next. The inference was drawn that acetyl choline acts as a mediator not only as between a nerve terminal and the tissue, e.g. muscle or gland, on which it acts, but also at the junction between one nerve relay and the next.

In the more purely chemical field steady progress has been made in the ever-widening field of sterol biochemistry. Among important sterols are the now quite numerous sex hormones, and the recent identification of the suprarenal cortex hormone as a sterol derivative closely related to the male hormone gives for the first time a reasonable explanation of the occurrence of cases of virilism in women suffering tumours of the suprarenal cortex. It has been shown that the suprarenal cortical hormone has profound and far-reaching effects on the metabolism of the body and these are still under investigation. One of its most interesting properties is its relation to the exchanges of sodium and potassium in the body.

The investigation, in man and other animals, of the curious rhythmical electrical waves—the Berger rhythm—in the brain is one of the recent developments of modern amplification technique. The waves occur at a frequency of about 10 per second, but only when the eyes are closed or in darkness; mental exertion causes them to disappear, as also does sleep. Their presence implies

that for some reason the nerve cells (chiefly in the occipital region) discharge synchronously under certain conditions. (See also BIOCHEMISTRY.)

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**Pierné, Henri Constant Gabriel** (1863–1937), French musical composer; born at Metz, Aug. 16. At an early age he entered the Paris Conservatoire, where he studied under César Franck among others, and in 1882 won the Grand Prix de Rome with his cantata *Edith*. From 1890 to 1898 he was organist of Sainte Clotilde, having succeeded César Franck in that position. From 1903 to 1910 he was deputy conductor, and from 1910 to 1924 conductor at the Concerts Colonne. In 1925 he became a member of the Académie des Beaux-Arts; and he was a commander of the Legion of Honour. Among the best known of Pierné's very varied compositions are the opera *Cydalise et le Chèvre-pied* (1923); incidental music to *La Princesse Lointaine* (1895) and *Ramatcho* (1908); and the musical legend *La Croisade des Enfants* (1902). He died at Ploujean, Côtes du Nord, France, in July 1937.

**Pig Iron:** see IRON AND STEEL.

**Pigs:** see CATTLE INDUSTRY; HOGS; LIVESTOCK.

**Pineapples.** Shipments of pineapples from Cuba to the United States and Canada from January to Sept. 1937, were the largest on record for that period. The U.S. took 84,140,000lbs. compared to 61,042,000 the previous year. About 115 cars of pineapples were shipped in 1936 and 1937 to Canadian canning plants. Cuba had approximately 7,000ac. in pineapples in 1937, with production estimated at about 1,600,000 crates of 70lbs. to the crate.

Production of pineapples in Florida was estimated by the U.S. Department of Agriculture as 20,000 boxes in 1937 and 40,000 boxes in 1936. The five-year average was 10,400 boxes.

Imports of pineapples and pineapple products from Hawaii into the U.S. in 1936–37 were 46,000 boxes of fresh pineapples, valued at \$112,000, compared to 68,000 boxes, valued at \$145,000 the previous season, canned pineapple, 570,459,000lbs., valued at \$39,569,000, as against the previous season's 515,751,000lbs., valued at \$33,569,000; pineapple juice, 253,136,000lbs., valued at \$13,754,000, against 156,142,000lbs. worth \$8,511,000 the preceding year; pineapple syrup, 48,000lbs., \$5,000; pineapple cattle feed, 4,187,000lbs., valued at \$38,000. Porto Rico exports of fresh pineapple to the U.S. in 1936–37 were 523,000 boxes, valued at \$1,214,000; canned pineapple, 4,548,000lbs. worth \$264,000.

(S. O. R.)

**Ping-Pong.** The eleventh international tournament for the world's championship in table tennis, held in 1937 at Baden, near Vienna, Austria, resulted in victories for both the men's and the women's teams representing the United States Table Tennis Association. The Swathling Cup was won by the U.S. men's team made up of Sol Schiff and Abe Berenbaum, of New York; James H. McClure, of Indianapolis; and Robert G. Blattner, Jr., of St. Louis. The U.S. women's team which won the Corbillon Cup consisted of Ruth Hughes Aarons, of New York; Jay Purves, of Chicago; Mrs. Dolores Probert Kuenz, of St. Louis; and Emily Fuller, of Bethlehem, Pa. It was the first time the two cups have been won by teams from the same country.

Players from the 30 nations that comprise the International



Table Tennis Federation took part in the 1937 tournament. Other world titles won at the Baden meet were: men's singles, Richard Bergmann (Austria); women's singles, Miss Aarons (U.S.), the title holder, and Trude Pritzi (Austria) were finalists in a "no-contest" match; men's doubles, Blattner and McClure (U.S.), the title holders; women's doubles, Vlasha Depetrisova and Vera Volubcova (Czechoslovakia); mixed doubles, Bohumil Vana and Vera Volubcova (Czechoslovakia). Elmer F. Cinnater, of St. Louis, was the non-playing captain of the U.S. cup teams.

Efforts to lessen the activities of "pushers" (strictly defensive players) was the subject of much agitation among table tennis fans in 1937. In the U.S. new rules have been adopted penalizing pushers and the net has been lowered from 6½ to 6 inches, to favour hitters, while in Europe a time limit of 20 minutes to a game was put in force. The U.S.T.T.A. withdrew temporarily from the I.T.T.F. in 1937 owing to the suspension of Miss Aarons by the English association, but later selected a team to send to the twelfth world championship tournament in London in 1938. Table tennis, which is familiarly known by the trade name "Ping-Pong," in the U.S., has grown rapidly, especially in England.

**Pitcairn Island:** see PACIFIC ISLANDS, BRITISH.

TABLE TENNIS players who represented the U.S. at eleventh annual world's championship tournament in Austria



JAMES MCCLURE, Indianapolis, Indiana,  
ranking U. S. player



WILLIAM CROSS, Newark, New Jersey



BERNARD GRIMES, New York



RALPH MUCHOW, Chicago



JAY PURVES, Chicago



RUTH HUGHES AARONS, New York  
(women's world champion)

**Pittsburgh,** a city of Western Pennsylvania, had an estimated population of 685,000 in 1937 and an area of 54-295 square miles. Elections held on November 2 resulted in the strengthening of the Democratic hold on city and county, Mayor Cornelius B. Scully being returned to office for a four-year term.

The University of Pittsburgh celebrated its sesquicentennial on February 25. On June 4 the cornerstone of the new Cathedral of Learning was laid. The building to the 27th floor is now, Jan. 1, 1938, occupied. The Stephen C. Foster Memorial, located on the university campus, was dedicated June 2, 1937. It is one of the finest memorials to a composer that has yet been created, consisting of an auditorium for intimate music and drama and an exhibition hall. The memorial possesses the best existing collection of Fosteriana, the gift of Mr. Josiah K. Lilly.

The Buhl Foundation began the erection for the city of its gift of the \$750,000 Buhl Planetarium on the North Side Diamond. The Pittsburgh Symphony Society raised a fund of \$250,000 as a two-year maintenance fund. The International Art Exhibit was held in Carnegie Art Galleries from October 14 to December 5. "The Yellow Cloth" by Georges Braque was awarded first prize. May 5-9 the Mellon Institute dedicated its new home with a series of meetings. The building is trapezoidal in form, nine



stories high on the inner court and six on the street. It is modeled after a Greek temple with sixty-two monolithic granite columns.

The Community Fund drive, November 8-30, reached its goal of \$2,500,000. The new State Department of Public Assistance is not likely to affect the present public welfare administration of the city.

The most significant news of 1937 was the transfer of the main offices of the U.S. Steel Corporation from New York to Pittsburgh. The corporation broke ground May 22 for a new sheet, strip, and tin plate plant that will employ about 4,000 men and produce 600,000 tons of steel a year. It opens in June 1938. Steel production flourished at the beginning of the year, but dropped from 96% of capacity in May to about 20% in December; the total tonnage of pig-iron for Pittsburgh in 1937 was estimated at 8,100,000 tons, the highest since 1929 and about 20% above the 1936 production. The general business index (based on the 1923-25 average) was 108.5 for 1937, an improvement of 10% over 1936.

(J. G. Bo.)

**Pius XI.** As supreme pontiff of the Universal Church and vicar of Jesus Christ, Pope Pius XI is the 260th successor of St. Peter in the See of Rome. Born at Desio, near Milan, on May 31, 1857, Achille Ratti was ordained priest on Dec. 20, 1879. He served successively as prefect of the Ambrosian Library, Milan, and of the Vatican Library, Rome. Appointed apostolic visitor to Poland in 1918, he was made nuncio in 1919 and consecrated archbishop of the Titular See of Lepanto. On June 16, 1921, he was created cardinal and named archbishop of Milan. Eight months later, upon the death of Benedict XV, on Feb. 6, 1922, Cardinal Ratti was elected pope and was crowned on February 12 as Pius XI.

The vigour and forcefulness in word and action that had characterized Pope Pius during the first 14 years of his pontificate were dimmed in the latter months of 1936 when he suffered from his first serious illness. On Christmas Eve, however, he broadcast from his sickbed a message of peace to the world. He threw off the burden of age and infirmity, and on Feb. 14, 1937, he was able to leave his chamber, and in April was presiding at his Vatican desk. On May 1, he left for the papal villa at Castel Gandolfo, where he celebrated his 80th birthday on May 31, and returned to Rome on September 30. During the entire year, though in a lessened degree, he gave private as well as large public audiences, presided at religious ceremonies, official congregations and assemblies, and very personally directed the world-wide affairs of the Church entrusted to him.

Among the many documents issuing from his hand in 1937 were three notable encyclical letters: *Mit Brennender Sorge*, March 14, dealt with the persecution of Catholics in Germany and charged the Nazi Government with a violation of its pledges; *Divi Redemptoris*, March 19, condemned the evils inherent in atheistic Communism and proposed the Christian means for saving society from the present chaotic conditions; *Ingravescentibus Malis*, September 29, recalled devotion, through the rosary, to the Blessed Virgin as the protectress against heresies. Many apostolic letters were directed by him to members of the hierarchy throughout the various nations treating of the problems affecting the Church. That sent to the Mexican bishops, *Nos es muy conocida*, March 28, was of exceptional importance.

Through the spoken word, Pope Pius frequently addressed the Faithful. On February 8, over an international hook-up, he delivered the closing address at the International Eucharistic Congress at Manila. On July 11, he broadcast an appeal for prayers for a confused world on the occasion of the dedication of the Basilica of Ste. Thérèse, Lisieux, France. At a secret consistory on December 13, at which he created five cardinals, he deplored the



POPE PIUS XI

attack on religion in Russia and Germany, the wars in Spain and the Far East. Again on December 24, addressing the College of Cardinals, he specifically protested against the Nazi persecution. Through all his utterances, Pope Pius besought God and men to bring to this warring world the blessings of national and universal peace.

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(F. X. T.)

**Planetariums** are not new. Three-dimensional mechanical instruments, capable of showing the relative positions and movements of the sun, moon, and planets, have been in use for hundreds of years. The projection planetarium, however, is a modern development, the first one having been installed in Munich in May 1925. This instrument differs from the old type of planetarium in that it has no globes to represent the sun, moon, planets, etc., but instead depends entirely upon the projection of light. And, in the projection of the heavenly bodies, the new instrument is much more than a planetarium, for there are shown in a most realistic way on an artificial sky-dome all of the planets, all of the stars—including the milky way—all of the heavenly bodies that can be seen by the best eyes under ideal conditions from any place on the earth's surface; and these are shown in their motions, both apparent and real.

In these motions it is possible to show the rising and setting of the sun, moon and stars, the apparent annual motion of the sun and the precession of the equinoxes. The observer's latitude can be changed to that of any point on the earth's surface from the North to the South Pole. One can travel forward or backward in time and show with great accuracy the skies for any period of history.

The projection planetarium was invented by Dr. Walter Bauersfeld, of the Carl Zeiss Optical Works of Jena, and all of the instruments have been manufactured by this firm. There are now (Jan. 1, 1938) 26 of these machines in the world. Four of them are in the United States—one each in Chicago, Philadelphia, Los Angeles, and New York—and a fifth has been ordered for Pittsburgh.



The popularity of these institutions is indicated by the attendance at the Hayden Planetarium in New York city, which had during the first two years of its operation nearly 1,500,000 visitors. It is the belief of the writer that the projection planetarium is without doubt the greatest invention ever devised by man as a visual aid in teaching in any field in the entire history of education. More than that, it provides an emotional experience replete with beauty and dramatic power. No description in words can give any adequate idea of its performance. The night sky of the planetarium, with its illusion of the immensity of space and the realistic representation of the stars including the milky way, must be seen to be appreciated. (C. Fi.)

**Plant Nutrition:** see BOTANY: *Plant Nutrition*.

**Plastics Industry.** There has arisen during the past ten years a new, world-wide industry which had small beginnings about 60 years ago, and, although many have objected to the name of plastics which has been given to it, this name has now been accepted by all countries. The best definition that has so far been given to the word is that of an American firm, which aptly states that "Plastics are man-made chemical combinations of Nature's raw materials. They are solid at ordinary temperatures, but when heated become soft and pliable. When moulded under pressure they take any desired shape and retain it."

This definition is true for all the materials of the industry, and can therefore be accepted as the practical one.

The materials which are generally accepted as being within the industry are the bitumens, casein, cellulose, and synthetic resins; but closely allied to them are hard rubber and the natural resins, particularly shellac, and all these materials are again subdivided into thermo-plastic and thermo-setting classes. By the former class is understood those that can be re-used by the application of heat, while the latter class are those that are irreversible after the initial heating has been applied.

The most striking developments that have taken place during 1937 have been in the thermo-plastic class, in which have been produced synthetic resins that have properties equal to that of quartz glass and have been used for such purposes as windscreens for aeroplanes and lenses for optical purposes and similar uses, where non-fragility is of the greatest value. A further development in this class is the enormous stride made in the injection process of moulding cellulose plastics, from which are produced such articles as spectacle frames, bezel frames, motor-car steering-wheels, bottle-caps, and a host of other articles.

In the thermo-setting class of plastics the year under review has been one of steady development and a widening of the uses of this class, one of the most striking being the development of a synthetic resin suitable for use in water-softening apparatus, while another is the application of laminated synthetic resin materials for decorative purposes, such as table-tops, wall-panelling, counter-tops, and doors.

Owing chiefly to the rapid growth of the industry and to the varying methods adopted by each country in the tabulation of their national statistics, it is not possible to obtain reliable figures of the production of plastics materials; but for 1935 it has been reliably estimated that 80,000 tons of synthetic resins and about 20,000 tons of cellulose materials were manufactured in the world, the principal countries being the United States of America, Germany, and Great Britain, in that order. Since that date, however, because of its policy of restricting imports, Germany has, it is estimated, become the chief producer of plastics, especially in those products which can be utilized to replace imported natural materials such as rubber. Other countries which have devoted a considerable

amount of attention to this industry are Japan, Russia, Italy, Norway, and Sweden. In fact, it might be said that there is no country in the world that has not enthusiastically taken up the production of plastics, and it can confidently be said that the future trend of this industry can hardly yet be predicted, having in mind the sources still awaiting investigation, such as the production of a uniform shellac, a resin based on sugar or alcohol, or a plastic material from the versatile soybean.

(See also ARCHITECTURE: *Materials*; INDUSTRIAL RESEARCH.)  
(E. J. W.)

**Platinum.** No data have been published on the Russian platinum output since 1926, and data on exports are incomplete; since these figures vary widely from year to year, the world totals fluctuate accordingly, and do not represent a true picture of the industry. A world total of 205,000 troy ounces in 1930 dropped to 178,000oz. in 1932, and increased in the following years to 240,000oz. in 1933, 280,000oz. in 1934, and 353,000oz. in 1935; the 1935 figure was swollen beyond normal by a heavy transfer of Russian stocks to London, and so is not representative; almost no Russian figures are available for 1936, so a world total cannot even be estimated as yet, but indications seem to point to a considerable drop from 1935, and more in line with the years immediately preceding.

Although the oldest and most consistent large producer, the Soviet Union has recently lost first place to Canada with its growing output of by-product platinum, recovered from the Ontario nickel ores. From 12,500oz. in 1929, the Canadian production increased to 131,600oz. in 1936, with prospects for a further increase in 1937. The next largest producer is Colombia, with an output which has ranged from 35,000 to 55,000 ounces. The fourth large producer is South Africa, which had a high figure of 45,500oz. in 1930, but has averaged about 26,000oz. since 1934, after having dropped to 5,800oz. in 1932. The United States output stands fifth in the list, with 5,600oz. in 1929, a low of 1,300oz. in 1933, and a recovery to 7,400oz. in 1936, the yield in 1935 and 1936 having been boosted above the normal recovery level by a newly discovered placer deposit in Alaska; normally, most of the output is a by-product from the refining of copper and gold.  
(G. A. Ro.)

**Plums and Prunes.** Dried prunes were generally a disappointing crop throughout the world in 1937, with an almost complete crop failure in the Union of South Africa, a greatly reduced yield in Australia, Rumania and Yugoslavia, a negligible production in Bulgaria and a slightly higher-than-average crop in the United States. The International Institute of Agriculture estimated the combined exportable surplus in Rumania, Yugoslavia and Bulgaria as 23,600 short tons, compared to 52,300 tons in 1936, but a carry-over from the 1936 crop increased the 1937 export supply to 29,100 short tons, the Institute estimated. The English market anticipated only 350 tons from Australia and none from South Africa which exported 275 short tons in 1936 and 1,260 tons in 1930, and which is normally the leading exporter of prunes in the British Empire. In the United States dried prune production in 1937 was estimated by the Department of Agriculture as 247,000 tons (dry basis), compared to 184,300 tons in 1936, and a five-year (1928-34) average of 226,140 tons. Production of plums and prunes for fresh use in California, Oregon, Washington, Idaho and Michigan was 109,000 tons in 1937, compared to 110,500 tons in 1936, and the five-year average of 123,880 tons. Prunes for canning and cold packing in Washington and Oregon were estimated at 25,000 tons, compared to 28,900 tons in 1936, and the five-year average of 11,020 tons.  
(S. O. R.)



**Pneumonia.** Perhaps the most important advance in pneumonia control in 1937 was the formal inauguration by New York State of a campaign for pneumonia control. Massachusetts has the distinction of having preceded New York by two years in the initiation of such a plan. Before the year was out New York city had followed New York State, and at the present time both the State and the city have established bureaus for pneumonia control with full-time directors in charge. Furthermore, the State and city both provide free of charge not only methods for determining the various types of pneumonia but also therapeutic sera for the more important types.

Details of the New York program will be found in a recent report by the Committee on Public Health Relations of the New York Academy of Medicine. The method of organization has been described in a pamphlet by Dr. Edward S. Rogers, director of the New York State Bureau of Pneumonia Control.

During 1937 favourable reports on the value of pneumonia serum continued to appear in the literature, not only for Type I and Type II for which serum treatment has become well established, but also for some of the newer types, particularly Type V, Type VII, and Type VIII. The death rate for these various types has been cut approximately 50 per cent by serum treatment, but when serum is given very early, the reduction is even more marked, probably two-thirds or three-fourths.

For the first time in history the physician now has at his disposal a serum of great value for the treatment of pneumonia and quick methods of making accurate bacteriological diagnosis. (See also SERUM THERAPY.)

Another contribution of great interest to the pneumonia problem was made by Horsfall and his co-workers at the Rockefeller Institute on the use of pneumonia rabbit serum in the treatment of lobar pneumonia. Twenty-two patients of various types were treated with type specific rabbit serum with only one death. Twelve of the 22 patients had pneumococcal bacteraemia at the time rabbit serum was administered. According to these writers the results are even more spectacular than with horse serum, the product which has been in use up to the present time. The rabbit serum seemed to have an additional advantage in that it penetrated the pleura in two cases and sterilized pleural exudates, thereby preventing the development of empyema.

One of the most important discoveries of recent years is the demonstrated value of sulphanilamide in the treatment of streptococcus infections. Streptococcus pneumonia is comparatively rare except in time of epidemics, but already physicians have discovered the value of sulphanilamide in streptococcus pneumonia. Claims have also been made by Heintzelman, Hadley, and Mellon that sulphanilamide is of value in the treatment of pneumococcus Type III pneumonia. These claims, however, have not yet been substantiated. Another development of interest which emanates from workers at the Mellon Institute in Pittsburgh is a cinchona compound which is devoid of injurious effects on the nerves and still has a bactericidal action on the pneumococcus. It has long been known that certain quinine derivatives were highly toxic for the pneumococcus, and some of these, notably ethylhydrocupreine, have actually been tried on patients. Most of them, however, are too toxic to be used in large doses. Maclachlan and his co-workers report that hydroxyethylapocupreine has been administered in large doses to 200 patients without any visual or other nervous disturbances. The group of patients who received the cinchona derivative showed a 26 per cent reduction in mortality over a control series, but these statistics may be open to criticism in several respects. This review indicates that rapid progress is being made in the specific treatment of pneumonia and that because of this progress we can look forward to definite reduction in the pneumonia death rate in the next few years. (R. L. C.)

**Poetry:** see AMERICAN LITERATURE; BELGIAN LITERATURE; CANADIAN LITERATURE; DUTCH LITERATURE; ENGLISH LITERATURE; EUROPEAN LITERATURE; FRENCH LITERATURE; ITALIAN LITERATURE; LITERARY PRIZES; LITERARY RESEARCH; PUBLISHING; RUSSIAN LITERATURE; SCANDINAVIAN LITERATURE; SPANISH-AMERICAN LITERATURE; SPANISH AND PORTUGUESE LITERATURE.

**Poison Gas:** see CHEMICAL WARFARE; MUNITIONS OF WAR; *Chemical Warfare.*

**Poland,** republic of Central Europe, member of the League of Nations. Bounded N. by the Baltic sea, East Prussia, and Lithuania, E. by Russia, S. by Rumania and Czechoslovakia, and W. by Germany. Capital, Warsaw. President, Ignace Moscicki (born 1867; elected 1926; re-elected 1933). National flag, white and red, in equal horizontal stripes, the former bearing the eagle and crown on a red shield.

**Area, Population, and Cities.**—Area: 150,052 sq.mi.; population: (1931 census) 31,942,027; (1936 estimate) 33,823,000:

County	Area (sq.mi.)	Population (1931)
Bialystok . . . . .	12,525	1,643,485
Cracow . . . . .	6,710	2,296,842
Kielce . . . . .	9,880	2,936,976
Lodz . . . . .	7,349	2,633,050
Lublin . . . . .	12,037	2,467,266
Lwow . . . . .	10,968	3,127,811
Nowogrodek . . . . .	8,867	1,056,780
Polesie . . . . .	14,158	1,131,455
Pomorze . . . . .	6,335	1,086,259
Poznan . . . . .	10,256	2,114,251
Silesia . . . . .	1,628	1,298,352
Stanislawow . . . . .	6,523	1,476,538
Tarnopol . . . . .	6,383	1,603,313
Warsaw . . . . .	11,378	2,530,675
Warsaw (City) . . . . .	47	1,178,914
Wilno (Vilna) . . . . .	11,201	1,275,269
Wolyn . . . . .	13,805	2,084,791

Three-quarters were Roman Catholics; one-eighth Orthodox. There is liberty of conscience. Of languages, 69 per cent spoke Polish, 16 per cent Ruthenian, 9 per cent Hebrew; there were 741,000 Germans (2.3 per cent).

Elementary education is compulsory; all education is free. Statistics (1935-36): 27,990 elementary schools with 4,681,345 pupils; 755 secondary schools with 181,138; 6 universities and 18 high schools with 47,161.

After Warsaw, the largest town is Lodz (638,857); Lwow, Poznan, Cracow, Wilno exceed 200,000, and five others 100,000 (1937). Ports: Danzig (*q.v.*) and Gdynia (84,000).

**History.**—The president is in supreme control; term of service, seven years. He appoints the premier (president over ministry of 10) and one-third of the senate (96); members of the Sejm (208) are elected for five years by universal adult suffrage. There are no political parties in either chamber.

At home uneasiness was general. A return to the party-system seemed possible. Incidents were appeals for unity, notably by Col. Adam Koc, leader of the Polish National Union, and Marshal Smigly-Rydz, Pilsudski's successor; the attempt to assassinate the former (July 17); the formation of three new parties; and a discussion between the president and the Socialists, with stabilizing results. Meanwhile, the four-year investment plan was extended (the year's expenditure on public works to be nearly £32,000,000). Anti-Semitic action broke out anew: Jews were unprecedentedly banned from the National Totalitarian Party; the medical profession banned, and the lawyers restricted them; a serious pogrom



## POLAR REGIONS—POLICE

occurred in Brest-Litovsk (May); the "anti-Jewish month" proclaimed (September) by Fascist parties was rigorously observed. Suspension of the executive of the Teachers' Union led (October) to a teachers' strike. Hurricanes and floods occurred in May. In July, prices being already controlled, the embargo on the export of flour was extended to cereals until July 1938. There were peasant unrest and strike clashes.

The Danzig harbour protocol was extended until 1939. In September tension arose from Polish children in the Free City being required to attend German schools, but in November an agreement was reached with Germany on the treatment of minorities. The Silesia partition agreement having expired, its resuscitation was inconclusively explored. A loan from France of £25,000,000 included an arms credit of £12,000,000. Col. Koc's defence program was endorsed by President Moscicki. In March a trade agreement was made with Germany. An exchange of visits between the president and King Carol foreshadowed a Polish-Rumanian alliance. For the Lithuanian question see LITHUANIA.

**Trade and Communications.**—Agriculture predominates; leading crops: potatoes and rye. In 1936 there were over ten million cattle and seven million pigs.

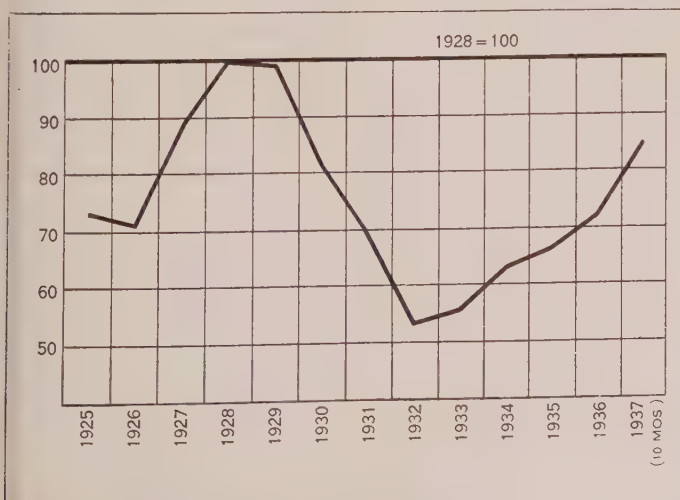
Natural resources include coal, iron, zinc, salt, naphtha and petroleum, and timber. Textiles and sugar are manufactured. Both imports and exports—1,003,435,000 zlotys (£40,000,000) and 1,026,208,000 zlotys (£41,000,000) respectively—showed a substantial increase (1936). Britain took nearly a quarter of the exports (bacon, eggs, timber, leading) and sent out goods to half their value.

The State railways had 12,480 miles open; there were 36,000 miles of roads and nearly 9,000 of navigable waterways. But means of communication (including telegraphs and telephones) await further development. The air lines recorded 5,842,000 passenger-kilometres and 543,000 mail-and-goods-kilometres (1935). The merchant navy is small; two liners were building in England.

**Finance and Banking.**—The unit of currency is the (nickel) zloty (at par, 43.38 zlotys=£1). The 1936-37 budget balanced at 2,221 million zlotys. The Bank of Poland issues notes (one-third covered); in circulation on Feb. 20, 1937: 951,382,000 zlotys. In the Post Office Savings Bank, 2,286,830 depositors were credited with 663,720,000 zlotys; there was as much again in others (1936).

**Defence Forces.**—The army (compulsory service) had (1936) 17,905 officers and 248,110 other ranks; the air force and navy were nuclear. (See also ANTI-SEMITISM; WATER POWER.)

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POLAND: Industrial production index (*The Annalist*)



TOMB OF MARSHAL JOSEF PILSUDSKI, first president of Poland, in Wawel Cathedral, Cracow. New dictator, Smigly-Rydz, upper centre

**Polar Regions:** see ANTARCTICA; ARCTIC EXPLORATION.  
**Pole Vaulting:** see TRACK AND FIELD SPORTS.

**Police.** The 13th Annual Congress of the International Police Commission was held in England, in London, in June 1937. This commission, established in 1923 thanks to the efforts of Dr. Schober, police president of Vienna and subsequently chancellor of Austria, has met at various European capitals—Vienna, Berne, Paris, Rome, Antwerp, Copenhagen, and Belgrade. Its aim is to develop and co-ordinate measures and institutions for the suppression of crime and for mutual assistance between the police authorities of different countries. Twenty-six European, the United States and four other countries, are represented and send delegates to the annual meetings of the commission.

Among the matters considered at the London meeting in June 1937 were (a) the drug traffic; (b) the counterfeiting of securities; (c) passport forgeries; (d) standardization of criminal records and statistics; (e) telegraphic transmission of finger-prints; (f) prevention of international frauds, such as the Spanish prisoner and the buried-treasure swindles, etc. International criminals are naturally those to whom the commission devote special attention; they are more particularly the trouble of countries with land frontiers, but all suffer to some extent from them.

The work of the commission has resulted in valuable inter-



changes of information in regard to scientific aids for the detection of crime and improved methods of dealing with many other police problems. There is an increasing tendency among the English-speaking and other nations to learn from each other in police matters, and visits of police officers to examine conditions in countries other than their own are frequent. The year 1938 will see a member of staff of the Federal Bureau of Investigation at Washington (the now world-famous "G-men") at the Police college at Hendon, established in 1934 by Lord Trenchard, and a reciprocal visit by a Scotland Yard officer to Mr. Edgar Hoover's department.

Apart from crime, the most important police problems in the large cities of the world are those arising in connection with motor traffic. In Scotland Yard's annual report for 1936, regulation of traffic and the prevention of road accidents received the largest share of attention, because of the extent to which the police have increasingly to devote themselves to protecting life and limb on the roads. The same can be said of many other reports by chief officers of police. In no country, however, has there been, as yet, much, if any, progress in reducing casualties. The most that can be said to have resulted from legislation and police efforts to enforce it, and from the many devices for securing safety, such as better roads, pedestrian crossings, mechanical signals, etc., is that casualties have been prevented from mounting still higher.

The year 1937 was not marked by any very grave outbreaks of public disorder, except in countries where war or warlike conditions prevailed. In Paris there were fascist-communist riots in March, followed by a general strike. These disturbances were, however, much less serious than the riots of Feb. 1934, and perhaps the most noteworthy incident in connection with them was the announcement that the French Government had decided to withdraw fire-arms from the police; but this has not yet been done.

In the United States in May there was a serious clash between steel strikers and the police in Chicago, and similar troubles occurred in Trinidad and Barbados in June and July. (See also **CRIME**.)

The character of the crime with which police have to deal differs considerably from country to country, but everywhere thieving forms the bulk of crime. The latest (Third Quarterly Bulletin, 1937) of the very valuable *Uniform Crime Reports* now issued for the United States and its possessions by the Federal Bureau of Investigation, shows that larceny, burglary or housebreaking, and the theft of motor-cars account for over 90% of crime; and much the same holds good of every country. It is in respect of the balance of 10% that variations occur. In Britain, in contrast with Continental countries and America, crimes of violence continue to be very rare and murders are almost confined to detective stories. Particularly marked in some countries is the growth of juvenile crime. (See **JUVENILE DELINQUENCY**.)

Every year sees increasing use made of scientific aids in the prevention and detection of crime. Most up-to-date forces now use wireless for the immediate dissemination to police patrol cars of information relating to crime, and the radio has led to the establishment of Central Information Bureaus or Complaint Rooms at police headquarters in touch with the patrols through the air and with the public by telephone. Large cities are also now generally equipped with call boxes, or "crime-prevention kiosks," through which the public can get into instant communication with police stations, and the stations send out calls to the foot police on duty in the streets. (See also **LIE DETECTOR**.)

Finger-prints remain the unchallenged and most valuable aid to the identification of criminals, and Scotland Yard's single print system, which has enormously increased the speed of identification and the extent to which sub-classification can be carried, is

coming everywhere into use. The *modus operandi* of classification and detection has also now been generally adopted.

In most countries there is a branch of the police whose work has a political character, but recent years have brought out the marked contrast between democratic and dictatorship countries in this respect. In the former the political work of the police has to do solely with the security of the State, in the ordinary meaning of that phrase, that is to say, protection against political extremists, ill-disposed aliens, etc., and various measures necessary in the interests of national safety. In his recent book *The Police and Modern Society*, Mr. August Vollmer, the well-known ex-police chief of Berkeley, Calif., and professor of police science at California university, says "Democracy's strongest reliance is the police." This is equally true of dictatorship, but in a different sense. In the countries which still enjoy representative democracy the maintenance of internal law and order by an efficient and impartial police, using no disguise save for the prevention and detection of crime, has been well described as the prop that sustains society and the amenities of civilized life. Under the absolute governments that now hold sway in Germany, Italy, and Russia, the continuance of the existing régime is dependent on a secret police and a widespread system of espionage which is as destructive of individual liberty as any known to past ages.

A comparative study of the annual reports of different police forces brings out the essential similarity of police work the world over, and they all have their amusing features. For example, the New York police, who have as difficult a task as any, are not entirely occupied with gangsters. The report for 1936 gives statistics as to cats rescued from trees, roof-tops, etc. It was stated in the London papers recently that, when Scotland Yard appealed to the public to make more use of the machinery for obtaining the assistance of police in an emergency, a number of similar cat calls were received, and also an inquiry from a lady as to what to do with a beetle and a matchstick which she had found in her loaf of bread. In addition to cats, the New York report mentions monkeys, snakes, bears, birds, squirrels, and even alligators "secured, destroyed, or delivered to owners." That of the Royal Canadian Mounted Police (the "Mounties") ranges from details of murder cases, rum-running, wheat thieves (who have taken the place of the old cattle "rustlers"), and the supply of walrus meat and "green" fish for police dogs, to the desirability of persons subject to periodic loss of memory registering their finger prints with the police, so that when they forget who they are they can call at the police station and find out. (See also **FEDERAL BUREAU OF INVESTIGATION**.) (J. F. Mo.)

**Poliomyelitis:** see **INFANTILE PARALYSIS**.

**Polish Corridor:** see **EAST PRUSSIA**.

**Pollard, John Garland** (1871-1937), American lawyer and administrator who served as governor of Virginia from 1930-34. He was born in King and Queen county, Va., Aug. 4, 1871, and was graduated from Columbian (now George Washington) university in 1893. Admitted to the Virginia bar, he practised in Richmond for twenty-five years.

He was a member of the Virginia Constitutional Convention (1901), chairman of the Virginia Commission on Uniform State Laws (1902-07) and attorney-general of Virginia and member of the State Board of Education (1913-17). In 1920 he was a member of the Federal Trade Commission and in 1922 was appointed dean of the Marshall-Wythe School of Government and Citizenship at the College of William and Mary. After his term as governor, he became chairman of the Board of Veterans' Appeals in 1934. He died in Washington, D.C., April 28, 1937.



**Pollock, Sir Frederick** (1845-1937), British legal expert whose *History of the English Law* (1895) and *The Expansion of the Common Law* have become classics. He also edited the *Law Quarterly Review* and the *Law Reports* from 1895-1935. His erudition in other fields was witnessed by such books as *The Etchingham Letters* (1899) and *Life and Philosophy of Spinoza* (1880). He was born in London, Dec. 10, 1845, and attended Trinity college, Cambridge. After reading law at Lincoln's Inn, he became professor of jurisprudence at University college, London, in 1882, and professor of common law in the Inns of Court two years later. From 1883-1903 he was Corpus professor of jurisprudence at Oxford university. He also served as judge of the Admiralty court of Cinque Ports from 1914-36, as a member of the Royal Labour Commission (1891-94), and as chairman of the Royal Commission on Public Records (1910). He died in London, Jan. 18, 1937.

**Polo.** Outdoor polo in 1937 was featured by the national open championship at the Meadow Brook Club, Westbury, Long Island. This tournament, with an entry of five of the best teams in the country and one from the Argentine, was played before the largest crowds in the championship's history and was won by the Old Westbury team of Michael Phipps, Cecil Smith, Stewart Iglehart and C. V. Whitney. The national junior championship and the twelve goal championship were won by the Santa Barbara team of California and the popular inter-circuit championship for the medium and low goal players was again won by the Huisache squad from Houston. Establishment of a far western division of the intercollegiate championship was made and this first tournament was won by the University of Arizona. The U.S. Military Academy captured the eastern division of this championship held on Governors Island.

Thomas Hitchcock's play during the season was again a high spot and included with him at the pinnacle of the game—a rating of ten goals—were Stewart B. Iglehart and Cecil Smith.

While indoor polo is confined mostly to the eastern and middle western parts of the United States, it showed a steady growth in member clubs and spectator interest. The New York Athletic club trio continued as the leading team, winning the senior division of play in the national championships held in New York in March.

A complete revision of the rules of play of the indoor game took place early in December, the most important change being the adoption of the outdoor free hit in place of the one-half point deduction for fouls. The new rules have proved popular with player and spectator alike. (R. F. K.)

**Great Britain.**—An outstanding feature of the 1937 season in England was the visit of the Australian Goulburn team, which consisted of the four brothers Ashton. This was their second visit, as they came as a complete polo team as far back as 1930. On this latest occasion they proved a great combination, crowning their season with victory in the Champion Cup, although in this contest P. Ashton was unable to take his place in the team.

The Hon. Keith Rous's Jaguars also had a most successful season. They were narrowly defeated by the Goulburn team in the final of the Champion Cup, and were victorious in the Roehampton Open Cup and the Coronation Cup. The Ranelagh Open Cup was won by the Nawab of Bhopal's team, and the inter-regimental tournament by the 10th Hussars. At the Indian Empire garden party, held at Hurlingham, India beat a team chosen from the rest of the world.

Oxford won the annual contest with Cambridge by 12 goals to one.

One change in the laws of the game was on trial during the season. In addition to the free-hits from 60 and 40 yards, which could formerly be awarded as penalty for crossing, more severe

cases were penalized by a free hit from 30 yards. The conclusion of the vast majority of those interested in the game is that the additional penalty rule was a wise innovation, and there is no suggestion of its deletion.

**Polytechnics:** see VOCATIONAL EDUCATION.

**Pomerene, Atlee** (1863-1937), Democratic senator from Ohio between 1911 and 1923, who served as joint prosecutor in the Teapot Dome oil scandals of 1924 and as chairman of the Reconstruction Finance Corporation during 1932-33, was born in Berlin, Ohio, Dec. 6, 1863. Chosen as U.S. senator in 1910 because of local party services, he at once displayed a seriousness of purpose and a refusal to be dominated by outside interests which raised him to a prominent position. High lights of his Senate career were opposition to the Plumb plan for employee control of the railroads, sponsorship of the armed-ship bill during 1916, participation in creation of the Federal Trade Commission, and opposition to the prohibition and woman suffrage amendments to the Constitution. No sooner had he left the Senate than he gained even wider fame through his work in exposing the activities of Doheny and Fall. Chosen by President Hoover to head the Reconstruction Finance Corporation in 1932, he was not confirmed but served until replaced early in the following year by President Franklin Roosevelt. He died in Cleveland, Nov. 12, 1937.

**Pope, John Russell** (1874-1937), American architect, was born in New York city, April 24, 1874. He was especially noted as designer of several buildings located in the national capital: the Scottish Rite Temple (1916), Constitution Hall (1929), the National Archives Building (1933), the National Gallery of Art begun in 1937 and the projected Jefferson and Theodore Roosevelt Memorials. International recognition was accorded his designs for additions to the Tate Gallery in London (1936) and the war memorial at Mountfacon, France (1937). He received numerous awards for his work and from 1933 until his death in New York city, Aug. 27, 1937, was president of the American Academy in Rome. For further information on his career see the *Encyclopædia Britannica*, vol. 18, p. 225.

**Popular Front.** The *Front Populaire* was formed in France (after various preliminary movements) at the beginning of 1936, as an electoral alliance between the Socialist, Communist, Radical, and certain smaller parties, on the basis of an agreed electoral program. It won a handsome victory in the general election of 1936, and has provided the parliamentary backing for the Governments of M. Blum (Socialist) 1936-37, and M. Chautemps (Radical) 1937, both including Socialist and Radical, but not Communist, members. The Blum Government was driven from office in 1937 by the financial crisis, which took the form of a "flight from the franc" by French capitalists distrustful of the Government's measures. The Chautemps Government, with M. Bonnet, a right-wing Radical, as minister of finance, sought to reassure the capitalists by measures of economy; and the Socialists and Communists, though they disliked the turn to the right, supported the new Government on account of the international situation.

The *Fronte Popular* in Spain was also formed in 1936, as an electoral alliance of Socialists and Radicals on the basis of a common program and won an election victory similar to that of the *Front Populaire* in France. But in Spain this gave the signal for General Franco's armed rising.

In Great Britain, the movement for a Popular Front has not



been officially accepted by any of the parties, though many individuals in the Liberal and Labour Parties are sympathetic to the idea. It is distinct from, though not necessarily antagonistic to, the movement for a United Front between the Labour and Communist Parties (*see* LABOUR PARTY). In a few constituencies (Chertsey, Stroud, North Oxfordshire) local Popular Front candidates have been adopted by the local Liberal and Labour organizations, but have so far been disavowed by the Labour Party head office. In general, British advocates of the Popular Front take the view that, for the present, the best method of furthering it is collaboration between members of the "Left" parties on particular issues (Spain, China, Collective Security, the Means Test, nutrition policy), leaving over for the future the question of electoral collaboration. The Labour Party, hopeful of winning an independent majority for itself, is suspicious of any proposal for electoral collaboration with either Liberals or Communists. The Next Five Years Group, which includes progressive Conservatives as well as Liberals and Socialists, and Mr. Lloyd George's Council of Action are not committed to the idea of the Popular Front, but tend in the same direction in matters of policy at home and abroad. (*See also* FRANCE; LABOUR.) (G. D. H. C.)

**Popular Songs:** *see* SONGS, POPULAR.

**Population, Movements of.** In 1770 the earth was inhabited by about 800,000,000 people, of whom 155,000,000 were white. The earth is inhabited by about 2,100 millions, of whom 730,000,000 are white. The proportion of whites has thus increased from barely one-fifth to fully one-third. The enormous growth of the whites was due to a reduction of mortality. But their growth has slowed down in recent years, because fertility has declined more than has mortality.

The usual method of establishing a balance of births and deaths consists in deducting the death-rate from the birth-rate. But this computation does not take account of the age composition, and if the age composition—as is the case, for example, in the countries of Western civilization—tends to swell the birth-rate and to reduce the death-rate, the error is bound to be cumulative. The best method of establishing the balance of births and deaths consists in computing the net reproduction-rate, which shows (on the basis of present fertility and mortality) the average number of girls that will be born to a newly-born girl in the course of her life, or, what amounts to the same, the average number of future mothers born to a mother of today.

Prior to the World War, the net reproduction-rate exceeded unity in every country of Europe except France. At present the rate is below one in all countries of western and northern Europe, with the exception of Holland and the Irish Free State; it is likewise below one in Czechoslovakia, Hungary, Finland, Latvia, the United States, Australia, and New Zealand. It is below 0.8 in England, Norway, Sweden, Belgium, France, Switzerland, Austria, and Estonia.

The only European countries in which it is above 1.2 are Portugal, the Balkan States, and Soviet Russia.

In western and northern Europe as a whole, the net reproduction-rate dropped from 1.3 in the 1880's to 0.8 in 1933-36. In central and southern Europe as a whole it still is about 1.15. For the whites as a whole it may also be around 1.15; but excluding Soviet Russia, it probably has not been above unity since 1932. For the white population of the British empire it was probably below 0.9 in 1933-36. (*See also* BIRTH STATISTICS.)

**Immigration and Emigration Statistics.**—Overseas migration on a large scale has occurred only from Africa and Europe to America. The negro slaves imported into America numbered

*Trend of Net Reproduction-rates, 1895-1935*

	About 1895	About 1910	About 1925	About 1935
Over 1.8	Ukraine	..	..	..
1.6-1.8	Poland Russia Serbia	Bulgaria	Russia Ukraine	..
1.4-1.6	Austria Denmark Finland Germany Hungary Norway Sweden	Denmark Germany Norway	Bulgaria Poland Union S. Africa Japan	Russia (?) Japan
1.2-1.4	England	Austria Finland Sweden Australia New Zealand	..	Bulgaria Portugal Ukraine Canada Chile Union S. Africa
1.0-1.2	Baltic Provinces	England	Denmark Finland Hungary United States	Holland Iceland Irish Free State Italy Lithuania Poland Spain
0.8-1.0	France	France	Austria England Estonia France Germany Sweden	Czechoslovakia Denmark Finland Germany Hungary Latvia Luxemburg Northern Ireland Scotland United States Australia New Zealand
Under 0.8	..	..	..	Austria Belgium England Estonia France Norway Sweden Switzerland

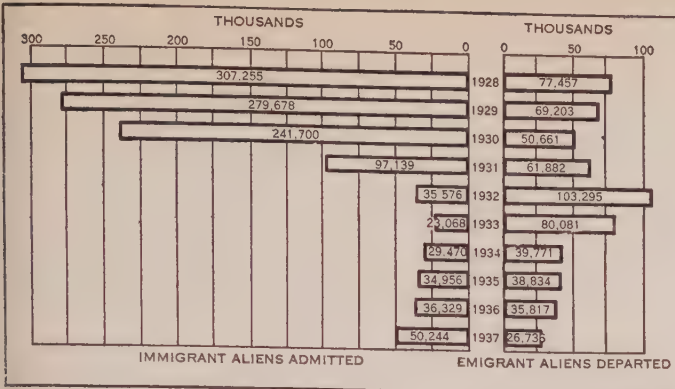
at least 15 millions. The Europeans who have immigrated into America and have not returned total nearly 40 millions. On the other hand, the number of permanent European immigrants into Australia and New Zealand has been, up till now, only about 2,800,000. Of the net overseas emigration of Europeans since 1492, amounting to about 45 millions, something like 24 millions went to the United States, 15 millions to other parts of America, and 6 millions to other continents.

For the British empire the balance of external migration, as a rule, was unfavourable. The empire, it is true, gained by emigration from continental Europe (to England, Canada, etc.), but this gain was offset by emigration from the British Isles and Canada to the United States.

In recent years emigration from the British empire to the United States has declined much more than immigration into the empire from continental Europe. As a consequence thereof the empire's balance of migration became favourable. England between July 1, 1931, and June 30, 1936, had a net immigration of about 270,000.

On the other hand, some countries which usually have a favourable balance of migration witnessed in recent years an excess of





IMMIGRATION AND EMIGRATION 1928-1937, United States of America. (Figures are for fiscal years ended June 30)

emigration over immigration. The United States between July 1, 1930, and June 30, 1937, had a net emigration of about 280,000. France in the quinquennial period ending March 8, 1936, had a net emigration of about 100,000.

The greatest continental migration of modern times, the peopling of Asiatic Russia with Europeans, has not yet come to an end. The same holds true of the emigration of German Jews which started in 1933.

(R. R. K.)

**Populations of the Countries of the World:** see AREAS AND POPULATIONS OF THE COUNTRIES OF THE WORLD.

## Porto Rico

(PUERTO RICO), a United States insular dependency in the West Indies; languages, English and Spanish; capital, San Juan; governor, Gen. Blanton Winship. The area is 3,435 sq.mi.; the population by the census of 1935 was 1,723,534. In 1930, 25.7% of the population was negro. The chief cities (with est. pop. in 1935) are: San Juan, 137,215; Ponce, 60,867; Mayagüez, 44,907.

**History.**—Porto Rico is administered by a governor appointed by the President of the United States, and an elected bicameral legislature. The Fourteenth Legislature, meeting from February to April 1937, enacted laws to enable Porto Rico to receive benefits of Federal educational, and social legislation, and for co-operation with the Porto Rico Reconstruction Administration.

Of more general nature were a Fair Trade Act and four acts embodying provisions on birth control, which were subjected to bitter opposition, especially on the part of the Roman Catholic Church.

The outstanding features of the year's history were the political unrest, arising from dissatisfaction with the island's political status, and the striking economic improvement shown during the year. Political turmoil, which had begun in 1936 with the militant Nationalist (minority) Party agitation for independence, continued in 1937. On March 21, nineteen persons were killed and over 100 wounded in rioting which followed police efforts to prevent a Nationalist parade at Ponce. An independent investigation by the American Civil Liberties Union placed responsibility on the police. The Ponce incident was followed by formal Nationalist demands for a plebiscite on independence, while the majority coalition party urged statehood. In June, ten Nationalists were arrested, charged with conspiring to murder a United States judge. By the close of the year, however, the high feeling had subsided for the time at least.

Economically, Porto Rico showed marked progress during the year; the insular Government, co-operating with Federal agencies, particularly the Porto Rico Reconstruction Administration, pushed a comprehensive rehabilitation program, whose chief aims were industrial diversification and rural resettlement, in order to relieve the serious unemployment and to reduce the island's de-

pendence upon sugar as a crop. New industries were furthered, and agricultural experimentation undertaken, notably in tropical plants, as vanilla and quinine, which can find a ready market in the United States. Between 50,000 and 60,000 persons were employed in public works construction.

Simultaneous with the rehabilitation program, Porto Rico showed pronounced economic advance, with a total external trade greater than in any but one year since 1920. Revenues reached a record high, and the budget was balanced.

**Trade and Communications.**—Porto Rico has regular steamship communication with the United States and with other parts of the West Indies. Aeroplane service was further improved in 1937 by the installation of night-operating equipment. There are 493kms. of railways, and an extensive highway system of 1,880 kms. of insular roads, supplemented by local roads. In the fiscal year ending June 30, 1937, \$807,504.92 was spent on roads; for the next fiscal year, \$750,000 has been allotted by the U.S. Government to be matched by Porto Rico.

In the fiscal year 1936-37, exports increased 16%, to \$114,953,-827 (98% to the United States). Imports increased 18%, to \$98,875,491 (over 90% from the United States), bringing Porto Rico to sixth place in imports to, and seventh in exports from the continental United States. Sugar comprised 64% of the exports. Imports were both foodstuffs and manufactured articles.

**Agriculture and Manufactures.**—Porto Rico is primarily agricultural, with sugar accounting for 70% of the island's income. Coffee (1937 production: 20,000,000lbs.), chiefly for local consumption, tobacco (1937 production: 27,000,000lbs.), grapefruit, pineapples, and sea island cotton are likewise important. Manufacturing is relatively small, but rum (supplying two-thirds of the U.S. demand), cigars, canned fruit, and fine embroideries are important.

**Finance.**—The monetary unit is the United States dollar. Revenues and expenditures for the year 1936-37 were \$43,379,-340.35 and \$39,641,016.59 respectively. The insular government debt was \$25,778,747.22.

**Education.**—In the year 1936-37, there were 1,711 primary and secondary schools, with an enrolment of 246,868, a decline from the previous year due to withdrawal of Federal aid. The University of Porto Rico, at Las Piedras, had an enrolment of 4,955, a 10.4% increase.

(L. W. BE.)

**Portugal,** republic of Western Europe, member of the League of Nations. Bounded N. and E. by Spain, S. and W. by the Atlantic ocean. Capital, Lisbon. President, General Carmona (re-elected, 1935). National flag, green and red, halved vertically, with arms central.

**Area, Population, and Cities.**—Area (including Azores and Madeira): 35,490 sq.mi.; population: (1930 census) 6,825,883; (1935 estimate) 7,260,000:

Province	Area (sq.mi.)	Population (1930)
Alemtejo (3 districts)	9,219	587,660
Algarve	1,937	300,762
Beiras (5 districts)	9,208	1,734,162
Entre Minho-E-Douro (3 districts)	2,790	1,465,298
Estremadura (4 districts)	6,937	1,833,307
Tras-os-Montes (2 districts)	4,163	439,158
Islands	1,236	465,536

There is religious freedom, but Roman Catholicism is almost universal.

Despite compulsory education (since 1911), nearly a third of the people were illiterate (1930). Education figures for 1934-35: elementary pupils, 468,940; secondary, 18,621; in Lisbon, Oporto



and Coimbra universities, 6,476. Principal towns (1930): Lisbon (594,390); Oporto (232,280); three others exceeded 15,000.

**History.**—A new constitution of 1933 established a dictatorship on a corporative basis. The president is elected for seven years by direct male and limited female adult suffrage. There is a single-chamber national assembly (90, elected for four years; nominees of the National Union, which supports the premier-dictator, Dr. A. de O. Salazar), with a parallel corporative council. A privy council (10; appointed 1936) assists the president.

Incidents of the year at home included a great gale (late January) which wrought widespread havoc; the signature of an agreement (April) with Pan American and Imperial Airways for exploratory trans-Atlantic flights via the Azores; and the escape, unharmed, (July) of Dr. Salazar from attempted assassination by a bomb when entering a Lisbon church.

The Spanish war has naturally been a leading concern. A strict neutrality was maintained, enlistment in Spanish forces being banned (February). But previously Portugal had sent a note to Great Britain criticizing the closing of the Spanish frontier, and in June announced a reservation of attitude towards foreign observers, not uninfluenced by the withdrawal of Italy and Germany from the non-intervention scheme. Portugal has herself been re-arming with machine-guns from Italy and rifles from Germany. In August a rupture of diplomatic relations occurred with Czechoslovakia over the non-fulfilment of a contract to deliver machine-guns to Portugal. Portugal alleged that their export was withheld under pressure by Russia, an allegation denied by Czechoslovakia.

**Trade, Communications, and Finance.**—One-quarter of the land is waste; over one-third is under cereals; over 6% under fruit, and over 5% under vines; over one-quarter is forest (producing timber, cork, resin, and turpentine for export). After wine, fishing (especially for sardines) is the most important industry. Minerals await exploitation. Manufactures (textiles, etc.) are of minor importance. Trade figures (1935): imports, 2,294,949,800 escudos (£20,863,120; a considerable rise); exports, 923,724,300 escudos (£8,397,500); a small rise. Great Britain takes rather less than one-quarter (chiefly wine).

Mercantile marine (1935): 180 steam vessels (228,393 tons); railway mileage: 2,157 (449, narrow gauge); road mileage: 14,539. The State-owned telegraph and telephone systems are small, but a commercial telephone company serves the chief towns. There are 46 radio stations.

The currency unit is the *escudo* (at par, 110 escudos = £1 = \$4.87). The Bank of Portugal alone issues currency: notes in circulation (30% covered), 2,199,309,000 escudos (1936). Savings deposits (1935): 2,550,309,572 escudos.

Budget estimate (1937): revenue, 2,424,276,000 escudos; expenditure, 2,420,682,000 escudos. Total public debt (1936): £59,917,669.

**Defence Forces.**—Military service is compulsory. The army had (1936) 3,146 officers and 24,000 other ranks; air force, 95 machines; naval air service, 28. The navy (in 1935, 1,264 officers and N.C.O's., and 5,509 other ranks) has 7 sloops, 6 destroyers and 3 submarines. Military estimate (1935-36): 403,200,000 escudos.

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(H. Fw.)

**Portuguese East Africa:** see MOZAMBIQUE.

**Portuguese Guinea,** a Portuguese colony on the west coast of Africa, situated 12° N. and 15° W., bounded N., E., and S.E. by French Guinea. The capital is

Bolama. The area is 13,944 sq.mi., and the population (1933) 416,028. Imports and exports for 1936 were valued at £302,853 and £353,820 respectively; and the estimated revenue and expenditure for 1937 were £248,256 and £245,026 respectively.

The islands of São Tomé and Príncipe, some 125mi. off the coast in the Gulf of Guinea, form a separate Portuguese province. Their area is 384 sq.mi., and the estimated population is 59,055, of whom over 50,000 are in São Tomé. There is a 10mi. railway in São Tomé. Imports and exports (1935) were valued at £168,370 and £289,420 respectively, and estimated revenue and expenditure for 1937 were balanced at £88,400.

**Portuguese West Africa:** see ANGOLA.

**Postal Savings:** see SAVINGS BANKS.

**Post Office.** The audited revenues of the Post Office Department for the fiscal year ended June 30, 1937, amounted to \$726,201,109.89, which was the largest in the history of this service, exceeding by more than \$20,000,000 the previous banner year of 1930. The increase over the previous fiscal year amounted to 9.8%. Of the total income, \$643,561,093 or over 88% was from postage.

The audited expenditures for the department during the fiscal year were \$772,815,842.22, leaving a gross deficit which includes various non-postal items such as franked mail, air mail and Merchant Marine subsidies, penalty mail, and publications free in county, of \$46,614,732.33. Deducting all these non-postal items which total \$59,258,471.37, as authorized by Act of June 9, 1930, leaves a net postal surplus for services rendered for hire of \$12,643,739.04. This was the third net postal surplus during the past four years.

In addition to its customary functions, the Post Office Department has performed many other important public duties, including the distribution of Adjusted Service Bonds to veterans, the registration of approximately 33,000,000 persons under the Social Security Act, the collection of much of the data relating to the recent census on unemployment, and the sale of U.S. Savings Bonds in the amount of \$412,000,000.

**Air Mail.**—During the year both domestic and foreign air mail services have shown a tremendous growth. At the end of the calendar year the aggregate length of all domestic air mail routes was 31,991mi., within 9mi. of the statutory limit in effect on Dec. 31, 1937, and representing an increase of approximately 2,500mi. during the period. A total of 19,553,000lbs. of air mail was transported during the fiscal year, as compared to 15,377,000lbs. during the fiscal year 1936. The revenues during the same period increased from \$9,702,000 to \$12,439,000. While no new routes were established within the fiscal year, several extensions were made and the frequency of schedules on important routes was increased.

There was a substantial growth in the amount of mails carried by air to foreign countries, amounting to 41.8% in mails dispatched and 30.1% in mails received. Thirty thousand route miles are now embraced in the foreign air mail service, over which 4,445,591 miles were flown during the fiscal year. Service on the trans-Pacific route beyond Manila to Macao and Hongkong was inaugurated April 21, 1937.

An average of approximately 400lbs. of air mail is being handled on the trans-Pacific route in each direction.

During the fiscal year 1937, 326 new and additional Federal buildings were occupied, 26 extensions to existing buildings completed, and 24 new Federal buildings replaced a like number of old buildings which had become inadequate for Government purpose.

Nearly 400,000 people earn their living in the postal service,



of which something more than 250,000 are regularly employed.  
(H. BH.)

**Great Britain.**—The postal service in Great Britain includes much more than that of the United States; for in addition to handling letters and parcels by air and land, accepting postal savings accounts and handling money orders, the British department also has charge of express, telephone and telegraph facilities. For the fiscal year ending March 31, 1937, the British post office handled 49,253,000 inland telegrams, 9,238,000 international telegrams, 98,965,000 long distance inland telephone calls, 1,739,000 international calls and 1,881,600,000 local calls. The increased activity responsible for these figures was also evident in the more strictly postal business. Letters carried jumped from 7,345,000,000 to 7,690,000,000 and parcels from 162,208,000 to 174,353,000, but the greatest increase was in the number of letters and parcels sent by air—20,645,000 as compared with 10,792,000 in 1935–36. C.O.D., registered and express services increased similarly.

While the total post office business expanded from £901,000,000 to £962,000,000 during 1936–37, there was a slight reduction in profit. The postal branch raised its income 4.81% with only a .42% increase in expenditure, but expenses in both the telephone and telegraph services rose more rapidly than income and caused total profits to fall from £17,913,078 to £17,765,037. Of the total operating income of £84,139,651, the postal service brought £50,045,019; the telephone, £30,747,173; and the telegraph, £3,700,046. Operating expenses were £38,594,923, £23,604,010, and £4,528,268 respectively. Capital expenditures of £13,597,808, devoted largely to telephone development, were the largest in history exceeding the £11,902,129 spent in 1926. Of total British savings of approximately £2,800,000,000, nearly one-half were handled by the post office with 27,476,000 depositors making new deposits of £128,156,221 for a total of £528,385,603 postal savings deposits and £25,851,000 of national savings certificates being issued to make a total of nearly £500,000,000.

The outstanding innovation in the British postal service during 1937 was the expansion of the imperial air service. A fifteen-year contract signed in June with Imperial Airways provided for subsidies for carrying a maximum amount of mail during the period on regular schedules. By increasing night flying, the department hoped to reduce the time of the Australian service to seven days and of the South African to four. Provision that all first-class mail must be transmitted by air at the rate of 1½d. per half-ounce (double the former rate by steamer—1½d. per ounce) marks a revolution in air transport and mail service. The first service to be initiated under this arrangement was the South African which was inaugurated in late June and which soon was carrying loads ten times heavier than earlier in the year. Experience gained on the African route was of assistance in arranging similar service to India and Australia, the Indian-Malayan service being started on Feb. 23, 1938 with the Australian service projected for early summer.

**Post Office Department:** see GOVERNMENT DEPARTMENTS AND BUREAUS.

**Potash.** The crude potassium salts output of the world is almost exclusively the chloride or sulphate, with a small proportion of nitrate and carbonate, produced primarily for fertilizer use; only a very small amount goes into industrial chemicals, and even in the United States, where the industrial demand is probably higher than in any other country, with the possible exception of Germany, the chemical salts comprise only about 20% of the total. World production decreased from 2,800,000 metric tons of K<sub>2</sub>O equivalent in 1929 to 1,400,000 tons in 1932,

increasing to 2,400,000 tons in 1936, distributed as follows: Germany 60%, France 15%, United States 9%, Soviet Union 8%, Poland 4%, and Spain 3%; half of the remaining 1% comes from Palestine, and the other half from several still smaller sources.

The production of potash in the United States was a World War development that has been growing steadily since the post-War slump. From a typical "war baby" with 128 plants turning out 49,700 metric tons of K<sub>2</sub>O equivalent in 1918, it shrank to 20 plants and 9,200 tons in 1921; as the emergency supply phase shifted to substantial commercial development, the plants still further decreased in number, and their capacity increased; in 1929 five plants produced 55,900 tons, and expansion continued throughout the depression with practically no break; 10 plants produced 174,900 tons in 1935, and seven plants turned out 224,400 tons in 1936. In spite of this heavy increase in production the demand far exceeds the supply, and imports are still almost as large as production. The peak of imports was 326,000 tons in 1930, but only 221,000 tons in 1935, and 186,000 tons in 1936.

(G. A. Ro.)

**Potatoes.** The 1937 potato crop in 21 principal producing countries was 5,103,796,000bu., as estimated by the International Institute of Agriculture. This figure does not include Russia. There are no reliable data for U.S.S.R. production, but indications are that the good potato crop there may exceed Russia's known average annual yield of 1,895,743,000bu. for the five years ending in 1935. Nor does the Institute's total include France, where the 1937 crop approximated the 1936 production of 560,367,000 bushels. Argentina, which produces about 28,000,000bu. annually, and Belgium with an average crop of about 132,000,000bu. are also omitted as is the Irish Free State where the crop last year was almost the same as in 1936, or about 90,000,000 bushels. Including these and several smaller omissions, the 1937 crop totalled well above 8,000,000,000 bushels.

The Institute's total, however, is the record production for the last 15 years. In 19 countries in Europe the combined crop was 4,640,741,000bu. in 1937 and 4,128,761,000 in 1936. In Canada 71,055,000bu. (65,059,000)—figures in parentheses indicate 1936 production—and a five-year (1931–35) average of 73,744,000 bushels. The United States crop in 1937 was 391,159,000bu. (331,918,000), with a five-year average of 379,068,000 bushels.

Germany's record production of 1,950,388,000bu. led all known returns for the 1937 crop, which in the Reich exceeded both the 1936 yield of 1,702,062,000bu. and the five-year average of 1,636,908,000 bushels. The second largest crop, excluding the unrevealed Russian production, was that of Poland, with 1,388,889,000bu. in 1937, compared to 1,259,601,000 in 1936 and a five-year average of 1,140,984,000. Czechoslovakian production of 397,428,000bu. also exceeded both the 1936 figures of 393,215,000bu. and the five-year average of 326,687,000 bushels. But in England and Wales, while the 1937 crop of 110,992,000bu. bettered the 105,056,000 figures of 1936, production was less than the five-year average of 116,166,000 bushels.

Other principal countries reported by the Institute include: Italy, 110,229,000bu. (1937), 96,667,000 (1936), and 88,524,000 (five-year average). Austria, 102,399,000 (1937), 87,032,000 (1936), and 94,648,000 (five-year average). Hungary, 95,497,000 (1937), 90,068,000 (1936), and 61,522,000 (five-year average). Lithuania, 92,196,000 (1937), 76,250,000 (1936), and 73,532,000 (five-year average). Netherlands, 91,858,000 (1937), 92,099,000 (1936), and 111,113,000 (five-year average). Sweden, 64,925,000 (1937), 67,098,000 (1936), and 68,753,000 (five-year average). Scotland, 33,413,000 (1937), 36,960,000 (1936), and 36,057,000 (five-year average). For the United States yields averaged 123.1bu. to the acre, and in Idaho a yield of 240bu. to the acre is



the second largest on record. (See also AGRICULTURE: *Technical Developments*; MARKETING BOARDS.) (S. O. R.)

**Poultry.** Figures representing the economic place of poultry in the world are almost startling in their breadth. There were, for example, 387,251,000 chickens on U.S. farms at the end of 1937 and they had a value of \$292,650,000, as estimated by the U.S. Department of Agriculture. In England and Wales the poultry census for 1937, with 1936 figures in parentheses, was, chickens 57,555,000 (57,744,000), ducks 2,281,000 (2,606,000), geese 552,000 (634,000), turkeys 687,000 (707,000); in Canada, chickens 53,982,000 (55,769,000), turkeys 1,997,900 (2,044,700), geese 874,900 (854,900), ducks 654,400 (670,500); in Scotland, chickens 7,300,000 (7,954,500), geese 241,600 (261,100), ducks 217,000 (236,000), turkeys 117,100 (96,800); in Northern Ireland, chickens 9,219,600 (9,542,700), ducks 428,000 (498,700), turkeys 420,300 (389,300), geese 116,600 (139,000).

In round numbers the U.S. poultry industry produces approximately 30,000,000,000 eggs, nearly 400,000,000 chickens, between 15,000,000 and 20,000,000 turkeys, about 10,000,000 ducks, 4,000,000 geese annually, including more than 15,000,000 broilers. Receipts of dressed poultry in 1937 at the four principal markets, New York, Chicago, Philadelphia, and Boston were 328,489,748 lbs. compared to 353,577,183 lbs. in 1936. In addition there is a large trade in live poultry, with specially-built railroad cars for transporting live fowls and with thousands of crates of live birds sent by truck and rail to the large markets, particularly New York.

The number of chickens on U.S. farms in 1937 showed a decline of 7.9% from 420,257,000 in 1936 and represented probably the smallest flocks since 1922. Prices were disappointing and the year ending October 31 recorded the lowest margin over feed cost per fowl in many years. Turkeys in 1937 numbered about 10% under the 20,000,000 in 1936.

In the annual contest held yearly at the convention of Future Farmers of America, in connection with the American Royal Live Stock Show in Kansas City, Mo., teams of young men from 25 States competed in judging poultry. The trophy offered by the Institute of American Poultry Industries for excellence in grading market poultry was won by Robert Mason and Harold Rinehart of Alleman, Iowa. Second prize was won by Melvin Acquistapace and Richard Gray of Santa Rosa, Calif.

The success of 24 co-operative poultry auctions, which numbered 12,000 poultry and egg producers in their memberships, was pointed out by the U.S. Department of Agriculture. These associations are made up of producers near Boston, New York, Philadelphia, and other eastern cities, who found that Pacific coast and western co-operatives were selling more profitably in eastern cities than the local producers. By providing a steady source of supply in their auction markets the eastern associations were able to reduce the spread between local and city markets.

The World Poultry Congress will hold its seventh triennial convention in Cleveland, Ohio, July 25 to Aug. 7, 1939, with six nations represented. The congress met in Berlin in 1936.

(S. O. R.)

**Power:** see PUBLIC UTILITIES.

**Precious Stones:** see GEMS AND PRECIOUS STONES.

**Presbyterian Church.** The Reformed Churches holding the Presbyterian System, located within the U.S.A., are twelve in number and include 22,420 ministers, 22,503 churches, and 4,474,029 communicant members. Outside of continental United States, they have 2,211 American foreign missionaries and 12,800 native agents in a total of 21

countries, and with a communicant membership of 239,258.

Due largely to the influence of the great ecumenical conferences held in Great Britain in the summer of 1937, there are definite evidences of a desire for closer relationships among the Presbyterian Churches in the United States. It is likely that negotiations will shortly be initiated between the Presbyterian Church in the United States of America and the Presbyterian Church in the United States (Southern), looking to the reunion of these two communions which once were one and that the efforts so active a few years ago, looking to the union of the United Presbyterian Church of North America and the Presbyterian Church in the United States of America, will be renewed.

That new venture of Christian faith, the Evangelical and Reformed Church which was initiated in 1934 by the merging of the Reformed Church of the United States and the Evangelical Synod of North America, has been advanced by the adoption by the General Synod of a constitution and by-laws and their submission to the constituent districts and classes for study and future report.

The Presbyterian Church in the United States (Southern) is now engaged in raising a three-million-dollar "Accrued Liability Fund," in order that its Ministers' Annuity Fund may be put in operation. The Reformed Church in America has carried on a campaign for "greater things" which resulted in the raising of \$555,000 for benevolent purposes, or \$24,000 more than the projected budget.

The Presbyterian Church in the United States of America reports marked increases during the year 1937 in communicant membership and in gifts for current expenses and benevolences. At the last meeting of its General Assembly, it appointed a committee to study and to suggest amendments to the portions of its Constitution which are concerned with the relations of church and State. A committee which has been studying the problem of adequate ministerial compensation throughout the church is also continuing its work. Altogether, the year has been one of satisfactory advancement among the members of the Presbyterian family.

(L. S. Mu.)

**British Empire.**—Known as the Reformed Churches holding the Presbyterian System, there are some 36 separate churches or sub-divisions on the continent of Europe, with 3,016,201 communicants and 9,767,680 baptized persons, not counting Russia, for which country there are no returns.

In the British Isles, there are 10 of these churches, of which the following have the largest membership: the Church of Scotland, 1,288,648 communicants and 432,453 pupils in Sunday schools and Bible classes; the Presbyterian Church of Wales, 182,221 and 128,970, respectively; the Presbyterian Church in Ireland, 113,811 and 94,962; the Presbyterian Church of England, 81,715 and 46,474, and the United Free Church of Scotland, 21,826 and 11,336.

In Asia, there are 16 distinct churches, including the Church of Christ in China (123,043 communicants) and the Presbyterian Church in Korea (109,044), with a total communicant membership of 597,931 and 693,477 on the Sunday school registers. In Africa, including the Dutch Reformed Church in South Africa with 340,993 communicants, there are 17 churches having a communicant membership of 726,594. In North America 18 churches have a membership of 4,479,864; in South America there are 12 churches, and in the West Indies, four. In Australasia, the Presbyterian Church of Australia, the Free Presbyterian Church of Australia, and the Presbyterian Church of New Zealand, with a missionary synod in the New Hebrides and French churches in Oceania, have 106,252 communicant members and 131,128 Sunday school and Bible class pupils.

Taken altogether, the Reformed Churches of the world had in 1937, 10,714,366 communicants, an increase of 799,203 since



1933; and 21,628,577 baptized persons, an increase of 277,062 in four years. Of Sunday school members, there were 6,312,481, a decrease of about 100,000 in four years.

The 15th Quadrennial Council of the General Presbyterian Alliance was held with great success at Montreal, Canada, in June 1937, representative through their delegates of some 50 million Presbyterians scattered about the globe. The president was Dr. W. A. Curtis, principal of New college, Edinburgh, and the troubled situation of many Reformed Churches in Europe and in Manchuria gave great concern to the Council.

**Pre-School Children, Education of:** see NURSERY SCHOOLS.

**Presidents:** see SOVEREIGNS, PRESIDENTS AND RULERS.

**Prices, Commodity:** see PRICES, STATISTICS OF; PURCHASING POWER OF MONEY.

**Prices, Statistics of.** Preliminary to any discussion of the trend of prices during the year 1937, some consideration must be given to the changes which took place in the 13 preceding years. The year 1924 is generally regarded as a satisfactory starting-point for the real post-War period, 1919-24 being reckoned as a period of adjustment during which the economic machinery of the world was submitted to extensive overhauls for repairs and renewals.

The table below shows the course of prices in some of the more important countries.

The six years 1924-29 witnessed a fairly considerable expansion in demand for raw materials and foods. The organization of production was more than sufficient for this expansion, and the tendency of prices was downwards. During this period in Great Britain, there was a great deal of unemployment; the number of insured workpeople recorded as unemployed monthly never fell below the million mark in 1929, and opinion at the time inclined to the view that the country was going through the slow process of recovery from the post-War slump. It was only later, when the experience of the conditions of 1930 and 1931 were available for comparison, that recognition came of the comparative boom-like conditions of 1928 and 1929.

With the general falling-off in 1930 of demand for basic commodities, the catastrophic decline in prices set in, accelerated by the size of accumulated stocks. This very sudden drop to pre-War levels and below, shown in the table, was regarded with great concern in producing countries. In the autumn of 1931, the Gold Standard was suspended in London; in the spring of 1933, it was suspended in the United States. Demand began to increase again in 1932-33. Nearly all basic commodities are now subject to some kind of control of output. By 1936, the demand for com-

Index Numbers of Wholesale Prices of 40 Basic Commodities in Currency (1910-14=100)

(From Warren and Pearson, *World Prices and the Building Industry*, 1937)

	United States	Great Britain	Netherlands	France	Australia	Germany	Sweden
1924 . .	149	171	151	507	167	133	145
1925 . .	161	161	151	563	159	141	147
1926 . .	150	150	137	721	158	132	132
1927 . .	143	142	133	627	161	133	129
1928 . .	144	138	133	630	158	132	131
1929 . .	141	135	129	627	160	129	126
1930 . .	118	115	107	542	146	117	112
1931 . .	89	96	84	460	129	101	95
1932 . .	74	93	65	405	126	87	91
1933 . .	82	92	63	390	123	85	90
1934 . .	101	96	67	363	120	90	98
1935 . .	111	97	66	333	123	93	104
1936 . .	118	104	72	403	130	97	109

Department of Labor Index of Wholesale Prices

(1926=100)

	Foods	Dairy Products	Cereal Products	Fruits and Vegetables	Meats	Other Foods
1931 . .	74.6	81.8	73.1	72.4	75.4	69.8
1932 . .	61.0	61.3	66.4	58.0	58.2	60.7
1933 . .	60.5	60.7	75.0	61.7	50.0	61.1
1934 . .	70.5	72.7	88.7	67.5	62.9	66.6
1935 . .	83.7	79.8	94.1	63.6	94.5	77.7
1936 . .	82.1	83.9	86.2	71.9	87.8	75.9
1937 . .	85.5	..	..	..	..	..
Months						
1 . . .	87.1	88.0	88.1	82.4	90.6	82.1
2 . . .	87.0	88.7	89.3	87.8	90.3	78.8
3 . . .	87.5	90.2	90.1	86.5	92.0	78.2
4 . . .	85.5	78.5	89.8	83.5	94.9	77.0
5 . . .	84.2	73.1	88.7	84.1	95.9	75.2
6 . . .	84.7	72.0	90.4	84.5	98.0	74.3
7 . . .	86.2	76.4	92.3	71.2	106.0	74.6
8 . . .	86.7	79.7	87.9	65.3	112.1	73.6
9 . . .	88.0	84.8	86.1	64.0	113.4	75.5
10 . . .	85.5	85.2	84.6	62.2	107.4	73.4
11 . . .	85.5	93.1	87.6	74.2	99.0	75.6
12 . . .	79.8	90.2	82.0	57.8	88.8	71.5

modities and foodstuffs had reached a high level, and the consequent rise in prices was beginning to attract attention. Suggestions were made that perhaps prices were rising too quickly. The price of wheat in the United States was just about double what it was in 1932, rubber at 3d. per lb. in England in 1931 was 7½d. per lb. in 1936. Old stocks were becoming exhausted, and the way was free for a boom in prices.

**United States.—Food Prices, Wholesale.**—In recent years, the general trend of wholesale prices of foods was upwards from 1933 to 1935, 1936 was a year of slight recession, and in 1937 the general level was higher than in 1936 and 1935. But in the last quarter of 1937, there was a comparatively rapid fall. Whereas in 1936 the index of the Department of Labor rose from 83.3 in September to 85.5 in December, in 1937 the index fell from 88.0 in September to 79.8 in December. In the table above, the price indices for foods are given in detail.

The higher level in 1937 of the food index is mainly attributable to the very high level reached by the meat index, which stood at 113.4 in September, having risen to that level from the beginning of the year. Since September, the meat index has receded to a figure of the same order as those for the earlier months. The average figure for dairy products in 1937 was lower than in 1936, while that for cereals was somewhat higher, and this was also the case for fruits and vegetables. In this case, the movement of the index during the year was very different from that in 1936. In 1937, the general level was fairly steady at about 85, for the first six months, after which came a sudden drop to a level of 60 at the end of the year. In 1936, on the other hand, the index rose sharply from 62 in January and February to 82 in June, after which it fell to 72 in September, and then rose to 75 in December.

**Food Prices, Retail.**—The general trend of retail prices indicated by the Department of Labor index of retail costs of food has been upwards since 1933. The figure for 1936 was 82.1, that for 1937 was 85.1. Since Sept. 1937, there has been a rather sharp falling off from 85.8 to 82.6 in December. The index was higher for each month than for the corresponding period of 1936 up to November, but the December figure was lower than that for December 1936. The detailed figures are given in the first table on the next page.

The meats index shows the same kind of movements during the year as was noted with the wholesale price index. It rose from 95 at the beginning of the year to 111.6 in August and 111.4 in September, since when it has shown a fairly rapid decline. The cereals figure has moved little during the year, but it has been,



## Department of Labor Index of Retail Costs of Food

(1923-1925=100)

	All Food	Cereals and Bakery Products	Meats	Dairy Products	Eggs	Fruits and Vegetables	Beverages and Chocolates	Fats and Oils	Sugar and Sweets
1931 . . .	82.1	83.5	96.4	80.8	67.2	73.3	83.2	70.4	64.7
1932 . . .	68.3	75.5	75.5	66.7	57.9	60.4	75.1	52.0	58.4
1933 . . .	66.4	77.4	65.7	65.2	55.3	65.8	68.4	48.6	61.5
1934 . . .	74.1	91.0	75.0	71.2	62.4	69.8	71.7	55.4	63.8
1935 . . .	80.4	92.9	96.1	76.7	73.5	60.6	70.3	81.5	65.0
1936 . . .	82.1	91.7	94.7	80.2	72.7	69.7	67.5	75.6	64.4
1937 . . .	85.1	94.3	102.1	83.2	71.5	69.6	69.8	78.4	66.0
Months									
1 . . .	84.6	92.4	95.7	83.4	76.3	74.4	68.6	79.6	64.8
2 . . .	84.5	92.6	94.3	83.0	65.0	78.2	68.9	80.1	65.6
3 . . .	85.4	92.9	95.4	83.6	64.3	80.5	69.3	80.3	65.6
4 . . .	85.6	93.8	97.7	81.6	64.7	80.0	69.6	80.2	66.0
5 . . .	86.5	95.2	99.7	80.1	61.8	83.1	69.7	78.9	66.1
6 . . .	86.2	95.4	102.1	79.8	62.5	79.0	70.0	79.5	65.7
7 . . .	85.9	95.7	107.8	80.9	68.0	69.0	70.4	79.5	65.1
8 . . .	85.5	95.6	111.6	81.9	71.9	61.0	70.7	79.9	64.8
9 . . .	85.8	95.1	111.4	83.9	70.0	59.2	70.4	78.4	66.5
10 . . .	84.9	94.7	108.8	85.1	81.6	56.5	70.3	77.5	67.4
11 . . .	83.6	94.0	102.8	86.6	84.9	56.2	70.1	74.8	67.1
12 . . .	82.6	93.7	98.0	98.2	78.0	58.4	69.4	72.0	66.8

apart from the month of January, above the 1936 level. The dairy figure again follows the movements in the wholesale index, but not with such amplitude, and the general level has been above that of 1936. The fruits and vegetables index has moved during 1937 in a similar fashion to the wholesale index, being high in the first half of the year, and then declining to a much lower level towards the end of the year. The average for 1937 is not substantially different from that of 1936. Of the other constituents of the index, that for eggs follows much the same course as in 1936, and the general level is hardly changed. The index for beverages and chocolates has not altered much during the year, but has been consistently above the figure for 1936 by about 3 points. Similarly, the movements in the series for fats and oils, and sugar and sweets have been slight during 1937, and the general average for the year in each case is above that for 1936.

**Great Britain.**—The general level of food prices during 1937 was higher than in 1936, though the increases recorded have not been as spectacular as those of materials, the maximum figure in October of 1937 being 15% above the 1936 level. The higher level is mainly accounted for by the substantial rise in cereal prices. These have been 20-30% above the 1936 level throughout

the year. The meat figures have shown a fairly steady increase during the year, the general level being some 6% above that for 1936. The other food and tobacco figure shows a rise for the year of about 4% above 1936. An interesting fact to be noted is that, whereas the year 1937 as a whole shows very little change as compared with 1930, the base year of the index, the cereal figure has increased considerably, some 25-30%, while the meat figure has declined by more than 10%, the other figure being very little changed as regards general level. The substantial rise in cereal prices in the past few years will have repercussions in the cost of living index.

In the last column of the second table on this page, there is shown the wholesale price index for all commodities and foods. This, of course, shows that prices on the whole have been throughout 1937 at a higher level than in 1936, but that a maximum was reached in July 1937, since when the general level has declined. The changes noted here are more than can reasonably be accounted for by seasonal movements.

**Retail Prices and Cost of Living.**—During 1937, the Ministry of Labour cost of living index increased from 51 in January to 60 in December, each figure representing a percentage increase above July 1914. The index had fallen to the record low post-War figure of 40 in 1933, and from that year had been slowly rising to 47 in 1936. The average figure for 1937 is 54; thus there has been a rapid rise of 7 points from 1936 to 1937, compared with the slower rise of 7 points from 1933 to 1936. This acceleration in the rate of increase of this figure is mainly accounted for by the rapid rise in food prices (retail) between 1936 and 1937. The index for food alone was 20% above 1914 in 1933, the year of lowest prices, and had increased gradually to 30 in 1936, but from that level it jumped to 39 in 1937. During the year, the only other constituent of the cost of living index to show a rise comparable with that of food was the index for clothing, which was taken as "between 90-95" in January, and "about 110" in December, both these figures again representing increases above July 1914.

During 1937 the wage index of the London and Cambridge Economic Service rose to 100½ from 97½ in 1936, having been 94 in 1933, (1924=100). Thus to compensate for a rise of about 7% in food prices from 1936 to 1937, there was a rise in the wage index of about 3%.

The rise in the cost of living index from 1936 to 1937 was about 5% (from 147 to 154).

On the average, the index of volume of retail sales of food for 1937 compared with 1936 appears to be 102. We may therefore reasonably assert with some confidence that the total volume of retail sales of food in Great Britain has increased from 1936 to 1937 by about 2%. But, according to the Ministry of Labour's estimates of the amount of employment amongst insured workers, it would appear that the total volume of potential consumers has increased between 1936 and 1937 by about 5½% (from about 10.9 millions to about 11.5 millions). These figures certainly suggest that the consumption per head on the average has declined from 1936 to 1937, and are in accord with the figures previously given where a comparison was made between the rise in the food price index and that of wages. (See also COST OF LIVING.)

(E. C. RH.)

**Primary Education:** see ELEMENTARY EDUCATION.

**Prince Edward Island,** the smallest yet the most populous provinces, lies to the south of the Gulf of St. Lawrence. It is crescent in shape, length 137 miles, width varying from 3 to 32 miles, area 2,133 sq.mi., divided into farms of 100 acres each, all

## Board of Trade Wholesale Price Indices by Commodity Groups: Foodstuffs

(1930=100)

	Cereals	Meat, Fish, and Eggs	Other Food and Tobacco	All Food	Total Index, Food and Materials
1936 . . . . .	99.1	81.1	94.8	91.7	94.4
1937 . . . . .	127.0	86.4	98.7	102.2	108.7
Months					
1 . . . . .	123.1	82.2	97.8	99.4	102.9
2 . . . . .	121.6	81.9	96.9	98.6	103.9
3 . . . . .	124.1	83.0	99.5	100.7	107.3
4 . . . . .	129.5	84.0	98.9	102.0	109.0
5 . . . . .	126.3	86.4	98.1	101.8	110.7
6 . . . . .	122.3	85.8	100.5	101.6	110.6
7 . . . . .	126.8	87.3	99.5	102.9	111.5
8 . . . . .	128.0	89.2	97.2	102.8	111.4
9 . . . . .	128.6	90.4	98.0	103.7	111.2
10 . . . . .	133.1	88.6	100.7	105.3	110.6
11 . . . . .	130.7	87.9	100.9	104.5	108.5
12 . . . . .	130.6	91.2	97.9	104.4	107.6



owned by the occupiers. The population, census 1931, was 88,038; estimated for Jan. 1, 1938, 93,000, of which 81% was rural; 80% of British descent; 14% French; 41% are Roman Catholics; 17% Presbyterians; 28% United Church; 6% Anglicans. Capital, Charlottetown, 12,361. The government is constitutional, but the House of Assembly is of one mind; there are no parties. It is the last refuge of prohibition. Lieut.-Governor DeBlois, Premier Thane A. Campbell, and Chief-Justice Mathieson are the principal officers. Education as at June 30, 1937, absorbed \$543,109 for 18,183 enrolled pupils, with average attendance of 72%; cost per pupil \$38.30; teachers 657; average salary \$531. The Prince of Wales college has 504 students.

To Dec. 30, 1937, the official estimate of the revenue was \$1,799,816; the expenditure \$1,863,104, of which interest absorbed \$277,000, sinking fund \$154,000, roads \$220,000. The public debt at the same date was \$5,437,268, per caput \$58; the yearly tax \$20 for provincial expenditure. There is a moderate income and succession tax. The Dominion subsidy was \$647,181. Agriculture, the principal occupation, yielded in 1937: potatoes 5,500,000 bushels, 150 per acre; turnips, 4,500,000; oats 4,500,000; wheat 314,000; hay and clover 377,000 tons. To Sept. 30 only, the yield of butter was 1,764,309 pounds; of cheese, 426,648. The returns for 1937 not being complete, the statement as at Nov. 1st discloses fisheries at \$683,157; oysters 861,800 pounds; fox pelts estimated 70,000 to yield 2 million dollars. The net value of agricultural production \$11,725,908 varies little from year to year.

(A. MAC.)

**Princeton University.** Convinced that the survival of private colleges depends in large measure upon their ability to justify their right to exist, Princeton University during 1937—the 190th year of its existence—continued to broaden the scope of its research activities. In addition to its scientific program which since the days of Joseph Henry's discoveries in electromagnetism has contributed to the progress of civilization, Princeton augmented the projects conducted by its School of Public and International Affairs in political and social fields. Researches in the problems of population and the influence of the radio were added to its study of public opinion and its survey of local government in New Jersey.

Working toward the goal of self-education, Princeton developed its program of individual instruction, giving further recognition to differences in need and aptitude of undergraduates. Having previously, through the medium of the School of Public and International Affairs, co-ordinated certain work in economics, history and politics, it inaugurated a plan of integration in the humanities. Gifts received totalled \$872,465. Its enrolment, which is controlled by a policy of limitation, was the largest in history, totalling 2,665, of which 277 were graduate students. The teaching staff numbered 382.

(H. W. Do.)

**Principe:** see PORTUGUESE GUINEA.

**Printing.** Contributions of scientific research probably constitute the major developments in the printing field during 1937, and these most likely were the culmination of previous intensive study. The recent years of economic turmoil have brought scientific research more to the forefront, and wider recognition is given the necessity of subjecting all factors entering into the production of printed matter to the test-tube analysis of the laboratory.

Manufacturers of machinery and equipment have made their contributions through improvements leading to greater speed, ease and convenience of operation. Scientific research has added new materials having a marked effect and leading to greater pos-

sibilities for the future. The whole trend has been toward the one aim of shortening the time between the completion of written manuscript or copy and its appearance in printed form.

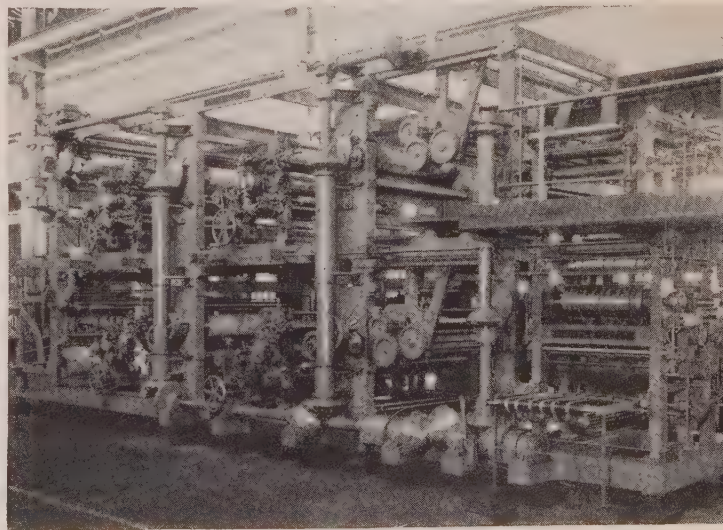
One contribution of science was the introduction just prior to the opening of the year 1937 of what is known as "Vaporin," which permits the instantaneous drying of inks, the ink vehicle being instantly vaporized by the application of heat, leaving a relatively dry ink film on the surface of the paper. Paper can be sent through the press at greater speed, and printed sheets can be handled in much less time after they leave the press.

The new enclosed ink fountain, known as the "Weiss Speedry Fountain," has increased the production of colour gravure presses from around 400ft. a minute to from 1200 to 1500ft. a minute, with possibilities for further speed increases and other advantages in production.

Another contribution to the printing field made by chemists is "Neoprene," a rubber-like material used to replace the composition or rubber printing rollers, and having increased wearing qualities as well as greater resistance to the vehicles used in inks and the various types of washes. And a substitute for rubber, called "Buna," used for printing rollers and blankets, and said to be 30% stronger than rubber, was also announced during the year.

Experiments in the field of colour brought out the "Monastal Fast Blue BS," a new insoluble pigment yielding strikingly brilliant shades of blue, and having resistance to most of the severe colour-destroying agencies. First used for printing inks, the colour has been said to meet all the requirements of fine process printing as it is strong and fast, and is outstanding in reproductive quality and beauty. The search for other colour pigments has also been carried on and given greater impetus.

Impetus has been given to the standardization of colours through the announcement of an international colour code which insures uniformity of colours and their varying shades, the code describing and explaining 720 colours and shades, and being designed to eliminate the confusion that has existed between scientists and industrialists of different countries on account of the impossibility of accurately defining various shades of colours. The introduction of commercial models of the "Spectrophotometer," a photo-electric recording device which removes the human element from colour analysis because its action is entirely mechanical and automatic, has also advanced the work of colour matching and standardization, classifying any shade of colour no matter



THIS IS A MODERN TYPE two-web magazine press, made by R. Hoe & Company, equipped with anti-friction bearings throughout. It has a double angle bar folder and is designed to operate at a speed of 34,000 32-page signatures per hour



how delicate.

The advance in colour science and its applications to the field of printing is also indicated by the fact that colour samples, or "Colorgrams," as they are called, were sent by telegraph from one city to another with the aid of the recording photo-electric spectrophotometer, and the new telegraphic facsimile service. The characteristics of the colour are charted by the spectrophotometer on a graph, a copy of the graph being transmitted by means of the facsimile service, thus enabling scientifically accurate colour specifications to be telegraphed in a few minutes to printers, advertisers, or others requiring colour analysis in a hurry. Great progress has been made during the year in the development of colour printing in daily newspapers. The advance in colour photography, and the corresponding advance in the reproduction of colour photographs by photo-engraving, has brought great progress in the use of direct colour photography for illustrating printed matter.

Impetus has been given to the work of accurately determining the visibility and legibility of printing and printing types, the introduction of the visibility metre having made possible a more scientific method of making tests. The problem of producing straight type matter or reading or text matter for offset lithography and gravure printing has been attacked more vigorously, efforts being continued to develop means by which the photographing of proofs of the type, or transferring them, could be eliminated. The outstanding effort along these lines probably is the continued development of the machine known as the "Oro-type," the operation of which is similar to that of an ordinary type composing machine, but which incorporates the use of a printing mechanism by means of which the type is printed, line by line as it is set on the machine, onto a cellophane film. The first impression from the type is made on a rubber blanket, after which the film is brought into position and pressed against the blanket by the type, thus giving the printed impression on both sides of the film and producing a type film, which offers a more direct method of transferring the type matter.

Renewed activity has taken place in the efforts to develop self-aligning or variable-spacing typewriters, by means of which typewritten matter can be properly aligned at both left and right hand sides, permitting of photographing direct from the typewritten copy and thus eliminating the setting of type. Several such typewriters have been developed, and through their use several newspapers printed on the offset press have made their appearance during the year 1937.

Experiments are being made with the use of regular type faces to take the place of the typewriter faces. Greatly increased interest has been taken in printing from rubber plates. Likewise there has been a noteworthy increase in the use of coating processes, such as varnishing, lacquering, and cellucoating, after the sheets are printed, the gloss finish given greatly enhancing the brilliance of colours as well as the varying shades and tones in illustrations. The cutting of matrices for another Oriental type face, the Tamil, is indicative of the steady progress being made toward increasing the use of printing in greater quantities the world over.

(J. L. F.)

**Prisons.** The year 1937 has witnessed some innovations in the conduct of prison life and management. In Great Britain, as the first step in a proposed program to widen privileges generally for the inmates of the country's prisons, Sir Samuel Hoare, the British Home Secretary, has established the regular payment of wages to all convicts for the work they do in prison. It is true that the pay is about two shillings a week and therefore is in no way commensurate with the amount of work done. However, it represents a significant break from tradition in

that the old days of the treadmill, breaking stones, and other unproductive tasks have thus been banished completely from British prison administration. Aside from this important change, current interest in penal matters in England is centred mainly about the construction of new prison institutions.

In the United States, guards in Federal prisons no longer carry clubs; although in some State institutions that weapon and the blackjack are allowed officers working within the walls.

The Governor of the State of Georgia has announced that the penological system of that State will be reorganized thoroughly and that the reorganization presages the doom of the notorious chain gangs.

The program hinges around a newly completed, ultra-modern prison in Tattnall county of that State. Tattnall will be maintained as a proving ground for convicts who will be employed at such trades as manufacturing automobile license plates and covers for school books. Those whose conduct wins approval will be transferred to honour camps where all members will have the status of trustees.

Many changes were introduced into the New York prison system through the findings of the State Commission for the Study of the Educational Problems of Penal Institutions for Youth. The plan is simple and is based upon the assumption that the proper type of education can reduce the tendency to recidivism in released prisoners. Curricula were developed for the different types of State institutions. Experiments in the use of this material were carried on in Clinton prison, Wallkill prison, and in the Elmira reformatory, all in New York State. The old formal method of teaching was discarded and the instruction was made as individual as possible through the adoption of the project method of teaching used in modern schools. This means giving the student a graded series of tasks and promoting him as rapidly as he finishes each one. In this way the individual student is unretarded by laggards. Under the new plan practically every official who comes into contact with the prisoner must be somewhat of an educator. This has led to one of the most progressive innovations of all—the employment of guards with educational backgrounds, or who are especially trained to assist in the educational work. In June, three hundred guards completed a ten-week training course at Wallkill. They are looked upon as the foundation of the new method in all the prisons of the State.

In New York State also, the City of Rochester was authorized by the legislature to impose week-end sentences upon a defendant until he completes the term set by the court. This enables a prisoner to serve his sentence without possible loss of employment.

(L. E. L.)

**Great Britain.**—Great strides were made during the year in ameliorating the life of the convict. Following on the successful experiments at Wakefield and Maidstone, it was decided to institute a system of wages, varying from 3d. to 1s. 7d. per week, for long-term convicts at Dartmoor, Parkhurst, and Chelmsford, the chief feature of the innovation being that it is to operate from the beginning of the sentence.

Other innovations were: the installation of sound-film equipment in the more important prisons for the exhibition of educational and travel pictures, with entertainment films on special occasions; and the general relaxation of smoking regulations. Convicts may now smoke, not only in their cells, but also when doing normal work, whereas formerly only a few were allowed to do so, and then only at set times and places. The system of treating offenders as "clinical cases" was developed during 1937, notably at Wakefield and Wormwood Scrubs, each convict having a medical chart.

Work proceeded with the construction of the new £14,000 Imperial Training college for prison officers at Wakefield. The Home



Secretary also introduced a training course for probation officers, with the aim of making the fullest use of the existing powers for the probation of young first offenders.

**Private Schools.** In both the United States and Canada the term, private school, includes what in England are known both as public schools and private schools. The great "public schools" of England like Eton and Harrow correspond to such privately endowed schools as Exeter and Andover in America. In the United States, "a private school is one dependent on private initiative for its inception and maintenance, not wholly or in part dependent on public taxation." (Sargent, *Handbook of Private Schools*, 1915).

Private and grammar schools in America in colonial times followed English patterns, the American public school being a development of the early 19th century. Not particularly numerous for years after the establishment of public schools, private schools began to increase rapidly in the last years of the 19th century. This process continued until the U.S. Office of Education in 1934-35 listed 9,992 private elementary schools, 3,327 private high or secondary schools, 1,551 private commercial schools, and 972 private or non-tax-supported colleges.

Approximately one-tenth of the children of school age in the United States attend private schools. During the school year, 1935-36, there were 2,638,775 pupils in United States private elementary and secondary schools. Nine-tenths of these students were in parochial schools and 2,251,466 (over 85%) in elementary schools. In the fall of both 1936 and 1937 private schools reported increased registrations with 15% more of the schools filled to capacity in Sept. 1937, than in the previous year.

Canadian private schools had 86,248 students in 1935, an increase over 1934, but otherwise the lowest since 1926. In provinces other than Quebec from 2% to 4% of the school children attended private elementary or secondary schools. In Quebec, however, where the proportion is 10%, most schools receive provincial subsidies and are thus not strictly private schools in the American sense. Canada also has many private business schools, which had an enrolment of 17,398 in 1935. (P. SA.)

**Processing Tax.** The processing tax in the United States was one of the fiscal measures enacted by Congress during the flood-tide of legislation in May 1933. Concisely described, the processing tax was a method of taxing the consumer of food in order to raise money with which to induce the farmer to reduce his output, to the end that the consumer should permanently have to pay a higher price. When it came before the Supreme Court, that tribunal held, on Jan. 6, 1936, that this tax was unconstitutional.

All that remains now of the processing tax is a great mass of controversial litigation over the recovery, by the taxpayer, of the sums previously paid. But in 1935 Congress had passed additional legislation intended to prevent the recovery of the taxes at the event that the law was held unconstitutional. The amount which the treasury actually collected in processing taxes was \$51,000,000; while about \$200,000,000 more was paid into the hands of the courts. In order to enable the treasury to collect at least a major portion of this latter amount, Congress enacted what is popularly known as the "windfall" tax, based on the theory that the taxpayer who had passed the original tax on to others should enjoy "unjust enrichment" if he were to recover that tax afterwards. The taxpayers have attacked the constitutionality of this "windfall" tax, and that question is before the courts today. (See also TAXATION.) (D. F.)

**Profits Tax:** see NATIONAL DEFENCE CONTRIBUTION.

**Progressive Education.** Progressive education has markedly influenced American educational theory and practice toward broadening the concept of the rôle of the school from one of primarily training children in the three R's to one of considering the whole development of the child as an individual and as a member of Society. This concept lays increased emphasis on the fine arts and other forms of self-expression, on mental hygiene and family relationships, and on a study of our changing civilization and the part each member of a democratic society must play in guiding that change. While the spirit and ideas of progressive education have affected schools generally, the organized movement is represented by the Progressive Education Association.

This association during the past year had 10,000 members, and held a national convention, five study institutes, and 18 regional conferences. It has fostered scientific research and the preparation of curricular materials through its various national commissions and committees, as follows:

The Commission on Relation of Secondary School and College has been conducting an eight-year experiment with the collaboration of 30 high schools and most of the colleges and universities of the country to determine whether the freeing of high schools from rigid college-preparatory requirements and allowing them to substitute a freer, broader type of education would hamper the subsequent college work of students.

The Commission on Secondary School Curriculum has conducted research and gathered materials and outlines for the reorganization of high school courses.

The Commission on Human Relations has gathered the findings of an important group of scholars in this field and made them available for classroom use.

The Commission on Educational Freedom has published pamphlets and study outlines to sensitize parents and educators to the importance of protecting educational freedom for teachers and students.

The Commission on Inter-cultural Relations has undertaken the preparation of programs and activities designed to bring about better and more sympathetic understanding among the various social and cultural groups in American communities.

The Committees on Progressive Education in Rural Schools, Community Relations and Education, Experimental Schools, Home and School Relations, and Child Development and the Pre-school and Elementary School Curriculum, have all been engaged in drafting comprehensive programs for research, experimentation, and the preparation of materials in their respective fields.

(C. WAS.)

**Proteins:** see BIOCHEMISTRY: *Proteins*.

**Protestant Episcopal Church.** In the record of the Protestant Episcopal Church in the United States for 1937 two things are especially noteworthy, the general participation of the clergy and laity in the Forward Movement undertaken with the object of stirring and strengthening the faith and spiritual life of the church, and the earnest efforts which have been made, in spite of the unfavourable financial conditions, for the maintenance of the church's missionary work at home and abroad. The Commission on the Forward Movement has printed and circulated millions of copies of its manuals of instruction and devotion and these aids to prayer and worship and Christian living have been widely and eagerly received. The offerings for the missionary work of the church, while still far short of the need, have given evidence of deepened faith and interest.

In Oct. 1937 the Triennial Meeting of the General Convention



was held in Cincinnati, Ohio. The most important action at this convention was the re-organization of the National Council of the church and the election of the Right Reverend Henry St. George Tucker, bishop of Virginia, to the office of presiding bishop. The subject which attracted the greatest attention was a proposal that the bishops should be given power to authorize the clergy to remarry persons divorced by a civil court whatever might be the ground on which the divorce was obtained. This proposal was overwhelmingly rejected.

An event of great historic and religious interest was the observance in New York and Philadelphia of the 150th anniversary of the consecration in Lambeth Chapel, London, of the first bishop of New York, Samuel Provoost, and the first bishop of Pennsylvania, William White, which gave to the church in America the Episcopate in the Anglican line of succession. In August representatives of the Protestant Episcopal Church participated in the Conference on Life and Work held at Oxford and in the Conference on Faith and Order held in Edinburgh. As a result of these conferences a meeting is to be held in Holland in May 1938, to consider plans for the formation of a World Council of Churches. The General Convention in Cincinnati took action providing that representatives of the Episcopal Church shall attend the meeting in Holland and report upon these proposed plans at the next meeting of the General Convention. (W. T. M.)

**Prunes:** see PLUMS AND PRUNES.

**Psychiatry.** The treatment of schizophrenia (dementia praecox) has reoccupied the attention of psychiatric workers because of the new forms of "shock" therapy. The use of gradually increasing doses of insulin causes the patient to become comatose or to have convulsions; remarkable remissions have been reported. After eighteen to twenty of such shocks given over a period of several months, patients are improved and even seem completely cured. Many are discharged from hospitals and asylums and returned to a useful economic existence. Metrazol, which is a camphor derivative, when injected intravenously causes epileptic convulsions. Fifteen or twenty such seizures produce the same effect as insulin shock. Cases most suitable for treatment with shock are those of recent onset; in this group the probability of improvement is between 60% and 80%. There is considerable optimism that the remissions so induced are more permanent than the often appearing spontaneous remissions. The treatment is still empirical since no explanation has yet been found for its spectacular effect.

Psycho-somatic studies have extended and deepened in many fields of medicine. Studies in the psychogenesis of gastro-intestinal diseases, respiratory diseases, arthritis and hypertension have shown that psychologic components in their causation are of extreme importance. These organic diseases it is claimed, may result as the end-product of long-continued disturbances of functions induced by repressed emotions exteriorizing themselves by changes in the vegetative nervous system. Therapy in the early stages when directed to the psychologic cause may prevent the terminal and irreversible organic disease.

Mechanical means of registering brain activity as indicated in changes of electrical potential have been possible by means of delicate radio amplification on the "electroencephalograph." Certain mental affections such as dementia praecox and organic psychoses have been found to produce brain waves characteristic enough for identification. Hence, diagnosis of certain types of psychoses may be simplified and the effects of therapy more objectively recorded. Relations between parts of the brain functioning in so-called intelligence and those related to emotions may be studied through these electrical brain waves and add much

knowledge to the effects of poorly handled emotions.

The extensive activity of psychiatrists interested in educating the public and the medical profession is showing results. Patients are seeking psychiatric help more directly and with less embarrassment. More important is the gradual permeation of psychiatry into general hospitals and in the general medical and surgical services. Indeed, physicians are becoming more aware of the *patient* who has a disease and are calling for psychiatric help or learning psychiatric methods in dealing with the emotional problems related to, assisting in the cause of, or resulting from organic diseases. Therapy of organic diseases is also influenced by extension of psychologic knowledge. For example, the woman with diabetes or the man with hypertension is made worse or better depending on how well their emotional factors as well as their somatic diseases are understood. (R. R. G.)

**Psychical Research.** Important developments in psychical research have taken place in both Europe and America during recent years. This is due primarily to the efforts which orthodox science is now making in the investigation of the abnormal faculties of the mind. Active groups of workers at such universities as Bonn, Duke, Johns Hopkins, Leiden, London, and Utrecht are producing results which augur well for the future.

Dr. J. B. Rhine's work on "extra-sensory perception" (the newest term for telepathy, thought-transference, and clairvoyance) has stimulated those interested in abnormal psychology to repeat his experiments. Dr. Rhine and his colleagues at Duke discovered that certain of the students and others possessed the telepathic or clairvoyant faculty to a marked degree. Sets of cards, each bearing five different geometrical figures, were used, and the percipients were invited to "guess" the designs on the shuffled, unseen cards. Nearly 100,000 tests were made, and the scores recorded exceeded any estimate based on chance. S. G. Soal, of London university, has duplicated Rhine's experiments, but not his results, the good "guesses" not amounting to more than chance would account for. Dr. Hans Bender, of Bonn university, has been more successful. G. N. Tyrrell, R. H. Thouless, and others of the (British) S.P.R. have also concerned themselves with extra-sensory perception, though the whole subject is still too controversial to admit of any positive deductions.

In 1937 the mystery of fire-walking was solved. Two years previously, a young Indian named Kuda Bux demonstrated to the University of London council for psychical investigation that he could walk barefoot on a fire-trench with a surface temperature of 430° C. without injury. These controlled experiments suggested that "faith" was the secret of immunity. In April 1937, a long series of experiments was conducted by the same group with another professional fire-walker, Ahmed Hussain. By instrumental means it was learned that no occult or psychic power is necessary in fire-walking, the secret of which is: (a) the short contact-time of each foot with the embers; (b) the low thermal conductivity of burnt or burning wood embers; (c) confidence in walking. A young Englishman, Reginald Adcock, walked over a fire with a surface temperature of 800° C. and was quite unhurt.

Another event of 1937 was the publishing of the report (the first of its kind) of the University of London council on the "telepathic" faculty of Marion, the vaudeville "thought-reader." It was discovered that his feats were due to unconscious hyperaesthesia of certain of the senses. Finally, spiritual healing is being practised still more extensively in Great Britain, and Milton Abbey, where the Rev. John Maillard conducts his mission, is to be enlarged.

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**Psychoanalysis:** see INSANITY.

**Psychology.** Progress in psychology rarely provides the clear-cut stepping stones paralleling the discoveries of radio-activity, heavy water, insulin, in the physical sciences, but shares with these their dependence upon novel or revised principles of interpretation. A selection of recent contributions yields a perspective of problems and positions in contemporary psychology. For its foundations, psychology is dependent upon biology, with closest relations to physiology and psychiatry. Whatever advances the interpretation of mind may be considered as psychology. (See APPLIED PSYCHOLOGY for the practical phases.)

The relation between neural structure and mental function assumes a reconstructed phase in the recognition of a *super-cortex* directing the supreme functions. The primary cortical functions direct interpretation of sense-impressions and coordination of muscle-groups. A more complex hierarchical integration is required for the high-grade animal and above all the anthropoid and human mental constructions. This is provided in the correlational fields, long ago recognized as "silent" areas of the cortex, as not responding to electrical excitations. There are such areas for visual, auditory and somaesthetic functions by support of which intellectual operations proceed. The supreme integration is the function of the great frontal lobes, operating through the correlational fields.

This view summarizes approaches of recent date, and is confirmed by the studies of Penfield. In his technique, the patient (usually for removal of tumor) is conscious during the operation, and as one and another of his cortical areas is stimulated the subject reports what he feels and his movements are noted. Over 100 subjects have been thus stimulated. In terms of actual contractions observable under stimulation, movements of the tongue, facial muscles, neck, jaw (opening and closing), swallowing, vocalization, as well as of trunk and legs, arms and shoulder, and most minutely of the hand and the separate fingers and thumb, have all been localized, together with a map of their spread and distribution. This is the first observation of a vocal sound under electric stimulation on a human subject. The sensory distribution

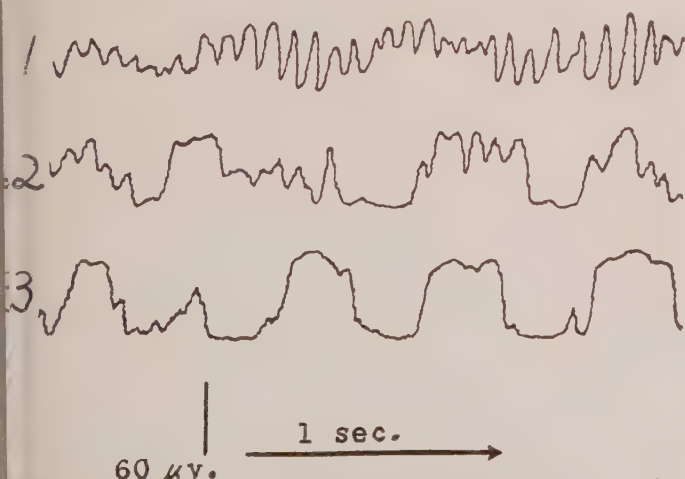
—reported as feelings—follows a similar pattern, though more diffuse and variable, with the major separation confirmed that the motor area lies anterior and the sensory posterior to the Rolandic fissure. The sequences within this region from above downward (legs at vertex, then arm and hand, then head, lip and jaw) are completely established. A figure drawn in proportion to the importance of their "psychic" representation results in a grotesque homunculus, which presents the actual conscious and control value of these bodily regions. Bard and Woolsey find the same localized somaesthetic area, in the loss through excision, in cat and monkey, of a specific postural or limb placing reaction.

The older view of sharply localized areas for all cortical functions was a half-truth, and the "equipotential" theory that any area was able to take up any function, or that loss of function depends upon quantity of tissue destroyed, has been modified by Lashley, its chief exponent, to the recognition of two orders of cortical relation, the one with a "mosaic" definiteness of location, and the other with far more diffuse localization. There is some substitution of function; but specialization dominates the cortical pattern, and plays an increasing role in the highest types of brains. Stimulating a mass of brain-cells cannot precisely parallel what actually takes place under sensory stimulation. Brickner's case of nearly total loss of *both* frontal lobes (unilateral loss may entail only slight deteriorating effects) shows the focus of impairment to be in intellectual synthesis, inhibition and emotional level. The frontal lobes maintain integrity of superior function. Except for speech, they represent additive, "luxurious" elaborations of processes initiated in other cortical areas. The conclusions confirm the position of Hughlings Jackson of a half-century ago—then dependent upon the interpretation of epileptic seizures, and his rare insight. In consequence of recent contributions, there has been established a far more complete picture of the neural basis of mind.

Cannon, Lashley, Bard and others bring additional evidence of the separability of the psychic emotion and the physiological registration of the expression of the major vital emotions, such as rage and fear. The thalamic region is definitely the seat of emotional expression; but it requires some process of cortical radiation to arouse the full emotion. The relations between the subcortical and cortical emotional "ring" await clarification. The James-Lange approach is proved out of focus.

Prominent in recent discoveries are the brain-waves, proving that the brain is not a passive organ awaiting stimulation, but initiates activity. The patterns of brain-waves differ in waking activity and sleep, and in the "floating off" feeling and in actual sleep by way of changes in frequency and form. The brain-waves, representing electrical potentials, are rhythmical, and their fluctuations suggest changes in the rippling of a pattern. The alpha type has a frequency of about 10 and the beta type of 25 per second. Brain-waves may eventually give a clue to differential drug action, stimulants and narcotics, and to severe psychopathic disturbances. There are individual types. They give no indication of the content but only of activity of the life processes of the cells. They represent the general condition which a total stimulus meets and directs to specific courses through neo-pallial organs.

The recording of brain-waves (oscillogram or electroencephalogram) has been applied to the objective study of primary organic responses and to the study of excitations of vision and hearing. Carmichael has demonstrated the development to responses in guinea-pigs from the 48th to 50th day of gestation, and correlated them with development of the nervous centres, and thus restated the relations of maturation and learning. From the responses of the young of the opossum, Bray draws similar conclusions as to completeness of response in early stages.



BRAIN WAVES in awake state and sleep. Record 1 shows the rippling when awake, with the 10 per second rhythm marked; yet with modulation. Record 2 is of light sleep; the 10 per second waves appear as notches upon the 10 per second waves. Record 3 is of deep sleep, showing marked 1 per second waves. The effects of disturbances during sleep but not sufficient to awaken, are much slighter, less regular, but apparent.



The record of the electric changes when sound reaches the ear, by Weaver and Bray, shows that the tone of low or middle range retains its specific vibrational characteristic in the auditory nerve and primary brain centers; which fact has bearing upon the functioning of the parts of the ear and their development. By combining the methods of conditioning and record of electric potentials, Culler has shown that each audible frequency has its own focus of response within the cochlea, the lowest tones of the registry near the apex of the cochlea; that the acoustic vibrations continue in disparate paths and in conformity to their pattern in the cochlea along the auditory nerve and lower centers. This result provides an additional basis for the analytical power of the human hearing, which makes speech and music possible.

A further interesting auditory study concerns the function of the ear in detecting the direction of sounds. A pseudophone makes sounds from the right which would be so recognized as louder in that ear, actually louder in the left ear. This confusion is even more difficult to adjust to than the pseudoscope of Stratton, which compelled the eyes to see with a direct image. All this bears upon the early fixation of habit in the neural pathways.

Along with the objective study of cortex and brain-waves, the technique of the conditioned reflex has been developed by Hull, who bases upon it an elaborate series of formulations, extending to a system of explanation of the mental mechanisms of adaptive behaviour. His researches form a noteworthy program. The eyelid, pupillar, knee-jerk, plantar reflexes, hand withdrawal, respiration, pulse, feeding reaction of infants, urinary output, etc., as well as the original salivary secretion, all are subject to conditioning. This Hull regards as the exemplar of the learning process at all grades. It is not the omission of "consciousness," for which he finds no place in a scientific formulation, but the neglect of the entire cerebral evolution, in which conditioning plays a minor rôle, that forms the ground of objection to this mechanistic scheme. The cortex may be interpreted as an elaborate device to supersede, to limit, and to escape conditioning.

An impressive advance is that of the field of animal behaviour. The presentation of the methods, principles and results of *Comparative Psychology*, by Warden, in three volumes, sets a model for other divisions of the rapidly expanding experimental sciences. Especially notable is the contribution to the mental and emotional life of the anthropoid apes, proving their foothold on the lower rungs of the ladder of human intelligence. These conclusions derive from the studies of Yerkes, of Mme. Abreu at Havana, and Mme. Kohts in Russia. The field of experimental psychology may be inferred from the contributions here sampled. Its scope appears in the volume of studies commemorating the fiftieth anniversary of the *American Journal of Psychology*.

The experiments of Rhine, claiming to establish the existence of extra-sensory perception—a more precise term than *telepathy*—in a selected series of a few subjects, have aroused great popular interest. The scientific attitude is at present sceptical. There has been no attempt to meet the biological objections to such an agency; manipulative errors are suspected, especially in the absence of control by independent methods. The methods have been criticized by Willoughby, Cox, Kellogg, Rogosin and others. A *Journal of Parapsychology* has been founded at Duke university.

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**Public Assistance:** see RELIEF.

**Public Health Engineering.** The basic physical and physiological data which underlie the practical arts of ventilation and air conditioning are being investigated with renewed interest and from some new points of departure. Professor Winslow and his associates at Yale have developed a new technique in the study of "partitioned calorimetry" whereby thermal equilibrium in the body is studied as the algebraic sum of heat production and of heat loss or gain by the avenues of radiation, conduction and convection and evaporation, each separately determined. A novel feature of these studies is the use of polished copper walls, reflecting radiant heat from a hidden source, hence having radiation temperatures independent of their actual temperatures.

Interest in the relation of radiant heat to comfort and health, has been largely stimulated by the British sanitarians. Following a renewed interest in radiant or so-called panel heating they have defined the mean radiant temperature as the uniform temperature of an enclosing sphere that would exert the same total radiation effect upon a human body as do the actual enclosing walls, floor and ceiling of a given space; and the equivalent temperature, as that uniform temperature of air and surrounding walls, that would result in a heat loss from the body by radiation and convection equal to that actually experienced. Mr. Dufton, of the Building Research Station, has developed an instrument, the Eupatheoscope, for integrating radiant and convective heat loss from the body and Dr. Bedford of the Industrial Health Research Board has described the Globe thermometer for distinguishing radiant from air temperatures.

There is likewise a renewed interest in the physiological bearing of radiation as distinguished from the usual warm air heating. Dr. Hardy at Cornell university medical college, New York, has demonstrated that perception of warmth results from radiation stimulus which brings about an elevation of skin temperature of only  $0.03^{\circ}\text{C}$  at a rate of  $0.01^{\circ}\text{C}$  per second.

The demonstration by Professor Wells that bacteria and viruses of the nasal-pharynx may, after evaporation of their carrier droplets of mouth spray, remain suspended in the air for appreciable times and be carried over considerable distances in viable condition, has led to a renewed interest in the possibilities of air-borne infection. Wells has extended his experimental studies of ultra-violet ray disinfection to actual working tests in hospital wards and operating rooms and laid down a standard procedure for evaluating the disinfectant power of a given lamp system in a given room system. On the interpretive side Buchbinder has examined some 7,000 samples of air from school-rooms, theatres, subway cars, etc. with special reference to "total counts" and numbers of alpha haemolytic streptococcus present and capable of growing on blood agar. The latter in particular appear to be always present in the air of occupied places and to provide a criterion of air pollution by human occupancy.

**Water Supply.**—Definite proof of the relation between fluoride in drinking water and "mottled enamel" of children's teeth has led to a systematic search for treatment methods capable of reducing fluoride content to below the dangerous concentration—about 0.8 mg. per l. Several methods have been proposed, the most successful depending upon the application of excess magnesium salt and its subsequent removal by usual softening procedures.



An unusual prevalence of enteric disturbances of obscure etiology and origin has caused concern among epidemiologists and water-works operators alike. Many of these small outbreaks appear to be water-borne and there is serious questioning by water-works men of the adequacy of bacteriological evaluation of water based wholly upon the *B. coli* test.

**Sewage Treatment.**—While in the United States there has been a considerable revival of interest in chemical treatments, the more complete bio-oxidation processes are still in favour in Great Britain and on the Continent. The great works of the West Middlesex Main Drainage Scheme, at Mogden, serve a present population of over one million, in a complete activated sludge plant, the largest in the Empire. In Germany, chemical processes are limited to those industrial wastes where bio-chemical processes are inadequate. Both in Great Britain and in the United States, the ultimate biological mechanism involved in the oxidation of organic wastes is being intensively studied. The consistently uniform rate of oxidation observed in laboratory tests of the biochemical oxygen demand, and apparently representing some rather fundamental biological principle, is not maintained under the conditions of the activated sludge treatment where rates of oxidation may be as much as ten times greater.

**Food Control.**—In the United States pasteurization of milk is practiced almost universally in the larger cities and the practice is extending to the smaller communities. The practice is also being rapidly extended in the principal British cities and on the Continent. While it is known that holding milk at from 142 to 145° for 30 minutes provides adequate protection, it has hitherto been impossible for health authorities to assure themselves that each particle of milk delivered has been thus treated. The recent development of the phosphatase test now permits the authorities to assure themselves on this point. The enzyme phosphatase, universally present in raw milk, is just about completely destroyed in 30 minutes at pasteurizing temperature. The test distinguishes milk underheated by one or two degrees, or held for 25 instead of 30 minutes.

**General.**—British sanitarians are actively interested in the applications of the open-air school. Begun as a preventive and curative measure in tuberculosis, the practice is being advocated for general use. Dr. J. U. R. Simpson has recently summarized its advantages among which he notes increased metabolism of 40 to 50%, resulting in better appetite and nutrition. To this feature, coupled with regular rest, controlled diet and good medical care, he attributes much of the observed advantage. (See also MEDICINE: *Public Health Work*.) (E. B. PH.)

**Public Health Services.** The difference between the organization of governmental public health services in the United States and that in most European countries is a difference inherent in the different forms of government. Governments with highly centralized powers have highly centralized health organizations, with supreme authority in all health matters. The Government of the United States, on the other hand, is a Federal Government, with divided authority and jurisdiction. Local health matters remain therefore in the police power of the states, and the states delegate authority to lesser civil divisions within their jurisdictions. The Federal Government administers health laws and regulations of national import, such as national quarantine laws and regulations, enters into treaties with foreign nations regarding international health matters, acts for the protection of health in inter-State traffic and the suppression of epidemics. It also engages in advisory, consultative, and investigative activities and aids state and local health organizations in health matters. As insanitary conditions, epidemics, and ill health are no longer considered of purely local

concern, the future may see an expanded conception and a broader interpretation of Federal health powers.

The official governmental health services consist, therefore, of the United States Public Health Service, created by Act of Congress in 1798, of state departments of health, and of the health organizations in towns, incorporated villages, counties, and rural districts. Local health ordinances and regulations must not be inconsistent with state and Federal laws. The state departments of health have jurisdiction over sanitation, control of communicable diseases, collection of vital statistics, maintenance of diagnostic laboratories, furnishing serums and other biologics, and similar health matters. The centralization and leadership in state health organizations vary; since 1920 there has been a tendency to build up stronger city and county health organizations. In addition to these official health organizations, there are many unofficial and private health organizations, professional associations, and various funds or foundations, which have made their contribution to the improvement of public health. Also many other Federal agencies, such as the Children's Bureau, the Bureau of Mines, the Office of Education, the Bureau of Chemistry and Soils, and the Food and Drug Administration, deal with some aspect of public health.

The history of public health service in the United States divides itself into four eras. The first was the era of sanitation, in which public health work was largely restricted to the control of environment and the enforcement of quarantine. Through improved sanitation of water and milk supplies and sanitary disposal of human wastes, great reduction in communicable diseases was accomplished. The second period marked the development of public health education—the dissemination of popular information regarding the prevention of disease. The third era, which began in 1912 with the common action of the American Medical Association and official and non-official health agencies was the development of the public health concept that all potential benefits of preventive medicine should be made available to every individual, and the periodic health examination was considered the *sine qua non* of such a complete health service. The value of the periodic health examination was apparently overestimated, but the broader interpretation of applied preventive medicine was carried over into the succeeding era.

We are now entering the fourth era of public health, which still has the objective of medical service and medical guidance for every individual from before birth to old age, but which is marked by a shift in the diseases and conditions attacked. Following the rapid decline in acute infectious diseases, there has been an increase in the chronic diseases of adult life. The control of the common communicable diseases, many of which have been reduced almost to a residual minimum, goes forward on its own momentum, and the emphasis of public health work is being shifted to such conditions as rheumatic heart disease, cancer, and other crippling chronic diseases which have become a challenge to the science of preventive medicine.

In recent years the U.S. Public Health Service has emphasized the need for better trained public health personnel, more ade-

Death rates per 100,000 estimated population in the Registration Area for tuberculosis (all forms), typhoid fever, diphtheria, cancer, and heart disease in five-year periods from 1890 to 1935.

Disease	1890	1900	1905	1910	1915	1920	1925	1930	1935
Tuberculosis (all forms)	245.4	201.9	192.3	160.3	146.3	114.0	86.7	71.5	55.0
Typhoid (and paratyphoid) fever	46.3	35.0	27.8	23.5	17.4	7.8	8.0	4.8	2.8
Diphtheria	70.1	43.3	43.6	21.4	15.7	15.3	7.8	4.9	3.1
Cancer (and other malignant tumours)	47.9	63.0	71.4	76.2	81.4	83.2	92.8	97.3	107.9
Diseases of the heart	121.8	132.1	152.2	158.8	165.7	159.1	185.7	205.7	213.1



quately staffed health services, and the extension of full-time health services to rural areas. These objectives are being brought near to achievement through the impetus given public health work by the health provisions of the Social Security Act. In 1937 there were 946 counties in the United States with full-time health services, an increase of 50 per cent as compared with the number in 1935. State and local appropriations for this work were \$7,500,000 higher in 1937, the increase almost equalling the amount, \$8,000,000 allotted to the States under the Social Security Act. Of this allotment, \$1,184,000 was set aside for the training of personnel and 34 States allotted nearly \$330,000 for the maintenance of adequate laboratory facilities. In the fiscal year 1937, 1,595 public health workers (1,173 nurses) completed courses of training in public health. (See also *MEDICINE: Public Health Work*; *STATE LEGISLATION: Health*.) (T. P.)

**Public Libraries:** see *LIBRARIES*.

**Public Utilities.** In historical perspective public utilities have, in recent years, continued to progress from a technical, economic, and regulatory point of view. Increasingly the economic and corporate organization of these industries in the United States during the past decade has assumed interstate proportions. The State regulatory commissions were thus without sufficient powers to deal with the widespread and interwoven corporate structures of the electric, natural gas, and communication industries.

**Extension of Federal Regulation.**—Wisconsin, New York, and other States made extensive commission reorganizations in 1937 in an effort to meet the changes which had occurred in these regulated industries. The adequacy of this reoriented State regulation to protect consumer interests without aid from Federal agencies is debatable. The depression beginning in 1929 focused public interest upon the expanded character of the utility industries and especially upon the abuses associated with holding companies and their security issues. There was also a revival of the movement for conservation of natural resources.

Radio broadcasting companies, formerly under the Federal Radio Commission, and interstate telephone and telegraph companies, formerly under the Interstate Commerce Commission, were placed under the Federal Communications Commission, 1934; regulation of interstate motor carriers under the Interstate Commerce Commission, 1935.

**The Securities and Exchange Commission (S.E.C.)** administers three statutes: the Securities Act of 1933, first administered by the Federal Trade Commission; the Securities Exchange Act of 1934, which created the commission; and title I of the Public Utility Act of 1935. The first statute required registration of new security issues with full and fair disclosure of material facts. The act of 1935 declared that "public utility holding companies and their subsidiary companies are affected with a national public interest" and provided for measures designed to give full and fair disclosure of the corporate structure of holding company systems controlling gas or electric operating companies. The act provided for the elimination of uneconomic holding company structures and for extensive regulation of corporate activities.

The Securities and Exchange Commission has been attacked in a large number of court cases involving the registration of utility holding companies. In a test case advanced by the Government to compel registration of the Electric Bond & Share Company the commission won decisions in the lower courts. On Jan. 3, 1938, the Supreme Court accepted the case for review. At that time it was estimated that about one-half of the companies affected, with control of something more than one-third of the electric and gas properties of the country, had registered voluntarily.

**The Federal Power Commission (F.P.C.)** was established by the Federal Water Power Act of 1920. Amendments to this act in 1930 reorganized the commission. Title II of the Public Utility Act of 1935 vested in the commission regulation of the rates and charges of electric utilities in interstate commerce, supervision over their mergers, sales or transfers of property, over security issues, and over other matters. Its powers to fix reasonable rates for electric energy transmitted in interstate commerce are supplemented with authority to co-operate with the State commissions. Accordingly, the commission has prepared, in co-operation with State commissions, a uniform system of accounts, applicable to all companies subject to its jurisdiction, which became effective Jan. 1, 1937. By the end of the year comparable systems, applicable to the companies subject to the jurisdiction of the State commissions, had been prescribed by commissions in almost one-half of the States.

These developments in uniform accounting, together with disclosures made in the S.E.C. security and holding company registrations, and the beginnings made in simplification of holding company structures, are all of fundamental importance to sound regulation. The 1937 annual report comments that "all those concerned take pride in the progress made in the field of regulatory accounting and feel that the co-operation between Federal and State commissions which brought about these achievements is unparalleled in the history of regulation in this country."

**Rural Electrification Administration (R.E.A.)** was created by executive order in May 1935, under the Emergency Relief Appropriation Act of 1935. It was given permanent status by the Rural Electrification Act of 1936. Its purpose is to facilitate, through organization or initiation, financing and supervision of new projects, the introduction of electric service into unserved rural areas for the material improvement of rural life. The administration has extended to a nation-wide basis the non-profit co-operative organization, long-term, low-interest financing, and economically-built rural line practices initiated by the Tennessee Valley Authority in 1933 and 1934. Projects sponsored by private utility companies are equally eligible to benefits under the act, but the plan of carrying service to the less densely settled areas has resulted in the greater part of the aid being given to non-profit co-operative associations of consumers. (See also *RURAL ELECTRIFICATION*.)

The administration's 1937 annual report gives the following data:

	Construction Released (Completed)	Loan Contracts Executed	Allotments Approved
Line construction:			
Amount of loans . .	\$51,594,312	\$70,847,470	\$76,260,923
Miles of line . . . .	53,069	67,043	73,584
Number of customers .	174,407	235,032	251,988
Generating equipment:			
Amount of loans . .	\$ 1,162,521	\$ 1,280,000	\$ 2,760,000
Wiring and plumbing:			
Amount of loans . .	\$ 300,000	\$ 440,550	\$ 782,500

The activities of the R.E.A. have spurred private electric utilities to revise their rural electrification policies and to carry service to large numbers of rural customers who had been left unserved.

**The Federal Emergency Administration of Public Works (PWA)** was created under title II of the National Industrial Recovery Act in 1933. Its purpose is to encourage recovery and provide for the construction of useful public works. Among the local projects of a utility nature supported by loans and grants have been sewerage and water systems, and electric generating



and distribution plants. The loans and grants to public agencies or competitive electric plants were challenged in the courts by the private companies. These cases finally culminated in a decision of the U.S. Supreme Court in the case of *Alabama Power Company v. Ickes, et al.*, decided Jan. 3, 1938, the effect of which was to release loans and grants for 61 publicly-owned projects in 23 States, having an estimated total construction cost of \$146,917,008 for which PWA had allotted \$61,225,544 in loans and \$38,412,008 in grants. The essence of the Supreme Court's opinion was that creation of competition between publicly and privately-owned utility systems, even though it prove ruinous to the private utility, is no bar to Federal aid.

**Federal Multiple-Purpose Projects.**—A number of Federal projects have been undertaken in the interests of conservation of natural resources, which mark an expansion of past conservation practices. The outstanding changes reside in the greater amounts of hydro-electric power involved and in the policies adopted for the disposition of this power. In general, the policy has been to liquidate all or a part of the total cost of the project through sale of power. These projects involve river improvement, navigation, flood control, salinity control, irrigation, and power production. The initial installed capacities of the major hydro-electric projects will be as follows: Bonneville, 86,400kw.; Boulder, 370,000kw.; Casper-Alcova, 32,400kw.; Central Valley, 60,000kw.; Fort Peck (navigation only); Grand Coulee, 525,000kw.; Tennessee Valley Authority, 697,000kw.

**For the Tennessee Valley Authority (TVA)**, one of the largest projects of this nature, see TENNESSEE VALLEY AUTHORITY, and for the Bonneville project, see TUNNELS. (M. G. G.)

**Great Britain.**—The public services owned or supervised by the State or local authorities are concerned mainly with the provision and distribution of various forms of power, such as electric light and power, and gas, with communication and transport, and water supplies. In addition must be mentioned the Post Office, the British Broadcasting Corporation, the many amenities such as libraries, baths, markets, parks, street-lighting, etc., and the health services of various kinds maintained by the State and municipal authorities and that are more properly grouped under social services. The tendency for such services to be concentrated increasingly in the hands of regional bodies is a marked feature of recent years, exemplified in 1937 by the recommendations of the Royal Commission on Tyneside (see MUNICIPAL GOVERNMENT: *Great Britain*), the proposals for the formation of public transport boards in Brighton, on Merseyside, and elsewhere, and the plans of the Government, to form the subject of a parliamentary bill in 1938, for the amalgamation of electricity-distributing bodies into larger units.

A good example of the lines on which new public service authorities are being constituted is the London Passenger Transport Board, formed in 1934, to co-ordinate passenger transport undertakings in the metropolitan area (extending for a distance of some 30mi. from Charing Cross), and consisting of seven members appointed for varying periods by a body of *ex-officio* trustees, the capital of the board being mainly issued as stock to the various authorities and organizations by the amalgamation of whose interests the board was constituted, a minimum rate of interest being guaranteed to stockholders.

"Air raid precautions" was a new public service that was coming to the front at the close of 1937, as also was the provision of airport accommodation by local authorities, over 60 such airports being already in use or in course of construction. (See also ELECTRICAL INDUSTRIES; ELECTRIC TRANSMISSION AND DISTRIBUTION: *Distribution*; GAS; UNITED STATES: *Recession, 1937*.)

**Publishers' Prizes:** see LITERARY PRIZES.

**Publishing.** Book publishing reached its lowest ebb in 1933. Recovery, which by 1936 approximated the level of 1929, continued through the year 1937.

Statistics from various countries of the world are not precisely comparable. German figures include a large amount of pamphlets and other material such as copyrighted theses, etc. Russian figures also include a large amount of pamphlets for educational and propaganda purposes. Consequently, Russian and German figures are about three to five times the size of those of the United States. The statistics of Great Britain and France include pamphlets, but the selection reported reflects the method of inclusion adopted in the United States. Only pamphlets comparable in size and content with books are included in the U.S. figures. If all kinds published were reported, as in German and Russian statistics, the total pamphlets would far exceed the total number of books.

The increase for the year 1937 in the United States was 4% over 1936, against a 25% increase for 1935-36. Thirty-four per cent of the listed titles were published by 18 houses which issued more than 100 titles each. Macmillan, with 605 titles, reached a new high.

As compiled by *The Publishers' Weekly*, American book production for 1936 and 1937 follows:

International Classification	For 1936			For 1937			
	New Books	New Editions	Total	New Books	New Editions	Total	Net Change
Philosophy . . . . .	107	13	120	128	24	152	+ 32
Religion . . . . .	684	26	710	767	44	811	+101
Sociology, Economics . . . . .	489	46	535	693	60	753	+218
Law . . . . .	108	41	149	128	21	149	—
Education . . . . .	301	31	332	318	16	334	+ 2
Philology . . . . .	173	49	222	279	18	297	+ 75
Science . . . . .	371	110	481	382	91	473	+ 8
Technical Books . . . . .	275	115	390	252	90	342	- 48
Medicine, Hygiene . . . . .	291	115	406	338	147	485	+ 79
Agriculture, Gardening . . . . .	110	30	140	98	32	130	- 10
Domestic Economy . . . . .	78	32	110	73	20	93	- 17
Business . . . . .	266	28	294	271	47	318	+ 84
Fine Arts . . . . .	211	19	230	276	26	302	+ 72
Music . . . . .	112	15	127	79	13	92	- 35
Games, Sports . . . . .	219	24	243	204	26	230	- 13
General Literature . . . . .	473	87	560	699	38	737	+223
Poetry, Drama . . . . .	679	130	808	673	81	754	- 54
Fiction . . . . .	1,327	574	1,900	1,355	541	1,896	- 3
Juvenile . . . . .	701	112	813	853	114	967	+124
History . . . . .	667	86	753	863	71	934	+181
Geography, Travel . . . . .	284	61	345	280	47	327	- 18
Biography . . . . .	626	73	699	596	64	660	- 39
Miscellaneous . . . . .	92	8	100	68	8	76	- 24
Total . . . . .	8,584	1,852	10,436	9,273	1,639	10,912	+476
Total of New Books and New Editions . . . . .			10,436			10,912	

The outstanding development in the field for the year was the extension of fair trade laws. By Jan. 1, 1938, 48 publishers had price maintenance agreements in force in 35 States, and there were fair trade laws in 42 States. The fair trade laws and the price maintenance agreements between publishers and retail booksellers resulted in the elimination of much price-cutting and unfair competition.

The National Association of Book Publishers, organized in 1919, concluded its extensive activities in December, 1937. At that time, publishers organized the Book Publishers Bureau, a service organization which will continue some of the work of the N.A.B.P.

**Book Fairs.**—This promotional idea, launched a few years ago, was especially successful in 1937. The *New York Times* National Book Fair ran for two weeks at Radio City, New York, in November, bringing lectures by prominent authors and publishers and exhibitions to thousands of visitors. Boston held its first Book Fair in 1937, and there were other fairs throughout the country—Detroit, Mich., Chicago, Ill., Dallas, Texas, Nashville, Tenn., Brattleboro, Vt., Battle Creek, Mich., to name a few. (See also CANADIAN LITERATURE; CHILDREN'S BOOKS.)



**Best Sellers.**—The outstanding novel was *Gone With the Wind*, with a sale of more than 399,999 copies to add to its record total, in 1936, of one million. The highest sale for the year was that of *How To Win Friends and Influence People*, with 729,000 copies. As compiled by *The Publishers' Weekly*, the 1937 best sellers are, in the order of their success:

In fiction: *Gone With the Wind*, by Margaret Mitchell; *North-west Passage*, Kenneth Roberts; *The Citadel*, A. J. Cronin; *And So—Victoria*, Vaughan Wilkins; *Drums along the Mohawk*, Walter D. Edmonds; *The Years*, Virginia Woolf; *Theatre*, W. Somerset Maugham; *Of Mice and Men*, John Steinbeck; *The Rains Came*, Louis Bromfield; *We Are Not Alone*, James Hilton.

In non-fiction: *How to Win Friends and Influence People*, Dale Carnegie; *An American Doctor's Odyssey*, Victor Heiser; *The Return to Religion*, Henry C. Link; *The Arts*, Hendrik W. Van Loon; *Orchids on Your Budget*, Marjorie Hillis; *Present Indica-tive*, Noel Coward; *Mathematics for the Million*, Lancelot Hog-ben; *Life with Mother*, Clarence Day; *The Nile*, Emil Ludwig; *The Flowering of New England*, Van Wyck Brooks.

**Great Britain and Ireland.**—In 1937, Great Britain enjoyed its highest annual total in book publishing. As indicated above, the figures are not strictly comparable with those of the United States because of the inclusion of pamphlets. Excluding pam- phlets, the English total of new editions is 10,790 as against 10,912 in the United States.

According to the records of *The Publishers' Circular* and *The Publisher and Bookseller*, the following is an analysis of books published in Great Britain and Ireland in 1937:

Classes of Literature (International Classification)	New Books			New Editions	Totals for 1937	Totals for 1936
	New Books	Trans- lations	Pam- phlets			
Philosophy . . . . .	217	18	12	26	273	274
Religion . . . . .	745	68	78	126	1,017	948
Sociology . . . . .	693	24	290	84	1,091	1,177
Law . . . . .	140	3	40	82	265	260
Education . . . . .	242	1	46	35	324	293
Military and Naval . . . . .	123	..	62	41	226	235
Philology . . . . .	211	3	16	28	258	235
Science . . . . .	567	14	58	110	758	678
Technology . . . . .	516	4	113	150	783	605
Medicine, Public Health, etc. . . . .	377	7	73	147	604	527
Agriculture, Gardening . . . . .	149	1	36	51	237	190
Domestic Arts . . . . .	98	..	10	14	122	128
Business . . . . .	96	..	16	32	144	138
Fine Arts . . . . .	288	7	29	50	374	338
Music (Works about) . . . . .	72	1	17	9	99	78
Games, Sports, etc. . . . .	239	4	11	42	296	283
Literature . . . . .	333	19	27	72	451	473
Poetry and Drama . . . . .	307	40	75	152	664	596
Fiction . . . . .	1,817	68	..	2,860	4,745	4,981
Juvenile . . . . .	905	11	318	529	1,763	1,608
History . . . . .	611	34	47	101	793	645
Description and Travel . . . . .	564	27	17	157	765	661
Geography . . . . .	74	2	4	14	94	81
Biography . . . . .	694	62	24	156	936	803
General Works . . . . .	204	..	..	..	204	187
Totals for 1937 . . . . .	10,372	418	1,419	5,077	17,286	16,572
	12,209					
Totals for 1936 . . . . .	11,686			4,886	16,572	

**Germany, France and Russia.**—Publishing information for these countries in advance of actual figures would indicate a con- tinued rise in volume. The chart in the second column shows the latest available figures, but it is to be remembered that the in- clusion of pamphlets of all kinds in German and Russian statistics is the reason for the apparently disproportionate and smaller pub- lishing activity in the English-speaking countries.

In Germany, the number of titles (including pamphlets) rose from 20,852 in 1934 to 23,654 in 1936, and probably reached 25,000 in 1937. New titles increased only 0.1% from 1935 to 1936, while the new edition of old books—about one-fifth of the entire book production—increased some 10%. (W. Yu.)

**Puerto Rico:** see PORTO RICO.

**Pugilism:** see BOXING.



BOOKS PRODUCED in the United States, Germany, France, Great Britain, and the Soviet Union. Figures indicate number of new titles published

**Pulitzer Prizes:** see LITERARY PRIZES: United States.

**Pulp Industry:** see PAPER AND PULP INDUSTRY.

**Purchasing Power of Money.** The term *purchasing power of money* means the amount of goods which money will buy. Obviously, at any given moment, money has a specific purchasing power for each kind of goods on the market. From day to day, each of these specific purchasing powers is likely to change, for the prices of goods commonly fluctuate.

In a broad way, the purchasing power of money tends to vary directly with its relative scarcity as compared to the supply of goods. Thus, when money is scarce and goods abundant a unit of money will buy a relatively large amount of goods. Statistical analysis proves, however, that the purchasing power of money is correlated more closely with the physical volume of trade than with the supply of goods on hand. Thus, when the ratio of the number of units of money to the number of units of goods dealt in grows larger, the purchasing power of a unit of money falls. The reverse is also true.

Attempts are often made to measure changes in the general purchasing power of money. To do this accurately, it would be imperative to have on hand a record of all exchanges of money for goods occurring during the period under consideration. Obviously, no such record is obtainable. It is, however, feasible to estimate without a very large error the average changes occurring in the command of money over certain large groups of commodities. Statisticians have compiled index numbers of prices believed to be representative for such groups as the following: (1) Commodities of all types sold at wholesale; (2) Commodities dealt in largely in international trade; (3) Articles consumed by the labouring classes; (4) Articles consumed by farmers; and (5) Corporate stocks sold on the exchanges.

The Federal Reserve Bank of New York compiles an index series weighting the price changes for various groups of commodities in proportion to the importance which each is believed to represent in the total trade of the United States. This index presumably comes the nearest of any published series to recording changes in the general purchasing power of money. Experience indicates that it fluctuates in much the same manner as indexes representing the prices of articles sold at retail to the labouring classes.



*The Relative Purchasing Power of Money at Various Turning Points During the Last Forty Years*  
(January 1937 = 100)

Year	Month	Index Numbers of Prices <sup>a</sup>				Purchasing Power of Money relative to Jan. 1937 <sup>n</sup>			
		All Commodities at Wholesale		Commodities Purchased at Retail by the Labouring Class		All Commodities at Wholesale		Commodities Purchased at Retail by the Labouring Class	
		United Kingdom	United States	United Kingdom	United States	United Kingdom	United States	United Kingdom	United States
1896	Annual figure	L 67.2 <sup>b</sup>	L 54.1 <sup>e</sup>	..	..	H148.8	H184.8	..	..
1897	Annual figure	68.5 <sup>b</sup>	54.2 <sup>e</sup>	..	..	146.0	184.5	..	..
1914	Annual figure	C 87.6 <sup>b</sup>	C 79.2 <sup>e</sup>	..	70.5 <sup>l</sup>	C114.2	C138.9	..	141.8
1915	Annual figure	101.5 <sup>b</sup>	80.8 <sup>e</sup>	123.0 <sup>l</sup>	70.2 <sup>l</sup>	98.5	123.8	81.3	142.5
1920	May	H267.5 <sup>o</sup>	H194.4 <sup>e</sup>	162.8 <sup>l</sup>	141.2 <sup>l</sup>	L 37.4	L 51.4	61.4	70.8
	June	265.0 <sup>o</sup>	193.6 <sup>e</sup>	165.5 <sup>l</sup>	H141.7 <sup>l</sup>	37.7	51.7	60.4	L 70.6
	Nov.	235.7 <sup>o</sup>	155.1 <sup>e</sup>	H182.8 <sup>l</sup>	133.1 <sup>l</sup>	42.4	64.5	L 54.7	75.1
1922	Jan.	134.7 <sup>o</sup>	L106.3 <sup>e</sup>	122.4 <sup>l</sup>	113.4 <sup>l</sup>	74.2	H 94.1	81.7	88.2
	Mar.	131.5 <sup>o</sup>	107.0 <sup>e</sup>	123.1 <sup>l</sup>	111.3 <sup>l</sup>	76.0	92.7	81.2	89.8
	Sept.	C126.8 <sup>o</sup>	115.5 <sup>e</sup>	113.8 <sup>l</sup>	L111.3 <sup>l</sup>	C 78.9	86.6	87.9	H 89.8
1923	July	128.6 <sup>o</sup>	114.4 <sup>e</sup>	C111.9 <sup>l</sup>	115.8 <sup>l</sup>	77.8	87.4	C 89.4	86.4
1929	July	112.2 <sup>o</sup>	C112.2 <sup>e</sup>	99.6 <sup>l</sup>	115.4 <sup>l</sup>	88.7	C 89.1	100.4	86.7
	Oct.	C111.8 <sup>o</sup>	110.6 <sup>e</sup>	103.3 <sup>l</sup>	116.4 <sup>l</sup>	C 89.4	90.4	96.8	85.9
	Dec.	108.0 <sup>o</sup>	96.6 <sup>e</sup>	C108.6 <sup>l</sup>	C115.4 <sup>l</sup>	91.8	103.5	C 92.1	C 86.7
1931	Sept.	L 81.5 <sup>o</sup>	82.8 <sup>f</sup>	84.7 <sup>l</sup>	99.1 <sup>l</sup>	H122.7	120.8	118.1	100.9
	Nov.	H 83.9 <sup>o</sup>	81.7 <sup>f</sup>	80.1 <sup>l</sup>	96.9 <sup>l</sup>	L114.3	122.4	116.1	103.2
1932	July	L 80.3 <sup>o</sup>	75.0 <sup>g</sup>	82.8 <sup>l</sup>	89.2 <sup>l</sup>	H124.5	133.3	120.8	112.1
	Sept.	H 83.9 <sup>o</sup>	75.9 <sup>g</sup>	81.5 <sup>l</sup>	88.1 <sup>l</sup>	L119.2	131.8	122.7	113.5
1933	Feb.	81.2 <sup>o</sup>	L 69.5 <sup>g</sup>	L 80.8 <sup>l</sup>	83.1 <sup>l</sup>	123.2	H143.9	H123.8	120.3
	Apr.	L 79.9 <sup>o</sup>	70.3 <sup>g</sup>	H110.2 <sup>l</sup>	L 82.5 <sup>l</sup>	H125.2	142.2	L 90.7	H121.2
	June	88.5 <sup>o</sup>	75.5 <sup>g</sup>	L 90.1 <sup>l</sup>	84.2 <sup>l</sup>	113.0	132.5	H111.0	118.8
	Dec.	89.5 <sup>o</sup>	82.3 <sup>g</sup>	H 94.7 <sup>l</sup>	89.1 <sup>l</sup>	111.7	121.5	L105.6	112.2
1934	June	85.1 <sup>o</sup>	86.7 <sup>g</sup>	L 91.4 <sup>l</sup>	84.2 <sup>l</sup>	117.5	115.3	H109.4	118.8
1937	Jan.	100.0 <sup>d</sup>	100.0 <sup>h</sup>	100.0 <sup>k</sup>	100.0 <sup>m</sup>	100.0	100.0	100.0	100.0
	July	108.7 <sup>d</sup>	H102.2 <sup>h</sup>	102.6 <sup>k</sup>	102.3 <sup>m</sup>	92.0	L 97.8	97.5	97.8
	Aug.	107.8 <sup>d</sup>	101.7 <sup>h</sup>	102.6 <sup>k</sup>	102.5 <sup>m</sup>	92.8	98.3	97.5	97.6
	Sept.	107.8 <sup>d</sup>	101.6 <sup>h</sup>	102.6 <sup>k</sup>	102.9 <sup>m</sup>	92.8	98.4	97.5	97.2

L—low point

H—high point

C—marked change in trend

<sup>a</sup> All relatives here presented have been arrived at by splicing together price relatives of various dates and transferring the spliced indexes to the base, January, 1937.

<sup>b</sup> *The Board of Trade Journal and Commercial Gazette*, Jan. 13, 1921, p. 34.

<sup>c</sup> *Statistical Abstract for the United Kingdom* (1921 to 1934), Statistical Department, London, 1936, p. 238.

<sup>d</sup> *Federal Reserve Bulletin*, November, 1937, p. 1171.

<sup>e</sup> *Wholesale Prices*, Bulletin Number 543, United States Bureau of Labor Statistics, Washington, 1931, Table 1, pp. 4-10.

<sup>f</sup> *Wholesale Prices*, Bulletin Number 572, United States Bureau of Labor Statistics,

Washington, 1933, Table 1, p. 10.

<sup>g</sup> *Survey of Current Business*, 1936 Supplement, United States Bureau of Foreign and Domestic Commerce, Washington, 1936, p. 12.

<sup>h</sup> *Survey of Current Business*, November, 1937, p. 23.

<sup>i</sup> *Statistical Abstract for the United Kingdom* (1920-24), London, 1926, p. 235.

<sup>j</sup> *Statistical Abstract for the United Kingdom* (1921-34), London, 1936, p. 137.

<sup>k</sup> *Federal Reserve Bulletin*, November, 1937, p. 1172.

<sup>l</sup> Beney, Ada M., *The Cost of Living in the United States 1914-36*, The National Industrial Conference Board, New York, 1936, Table 1, pp. 57-61.

<sup>m</sup> *Survey of Current Business*, November, 1937, p. 23.

<sup>n</sup> The relatives here presented are the reciprocals of the relatives recorded in the left-hand section of this table.

Reciprocals of the index numbers just mentioned furnish reasonably good criteria of the purchasing power of money as regards each of the respective groups of commodities covered.

During the last half century, the purchasing power of money has fluctuated widely in most nations. In both the United States and England, the command of money over goods increased from the 1870's until about 1897. Discoveries of gold in the Klondike and South Africa then made money more abundant in gold standard countries. Since both the United States and the United Kingdom were comprised in this group, the purchasing power of money fell in both nations. This decline continued slowly until the beginning of the World War. Soon most European nations abandoned the gold standard and began issuing great quantities of paper money. As a result, the purchasing power of the paper money declined sharply. According to Gresham's law, which states that cheaper money drives out dearer money, European paper money drove gold to the United States which was still on gold standard. This advent of great quantities of new gold caused the purchasing power of money to decline greatly in the United States. When, in 1917, the United States entered the war, inflation by the Federal Reserve Banks caused the purchasing power of money to fall still more rapidly. The decline culminated in the spring of 1920. Immediately thereafter, the speculative demand for commodities collapsed and the purchasing power of money increased sharply for something like a year, but thereafter declined somewhat. During the period 1922 to 1929 the purchas-

ing power of money in terms of commodities at wholesale remained fairly constant, but it fell in terms of land and corporate stocks. At the close of 1929, the stock market boom collapsed and the purchasing power of money increased sharply until 1932. Money's command over goods then began a decline. In both England and the United States this decline was greatly accentuated by abandonment of the gold standard and credit money inflation. In England, the decline was still continuing slowly throughout 1937. In the United States, because of a cessation of the inflation process, the command of money over commodities at wholesale, which had been declining rather rapidly since the middle of 1936, began increasing in August, 1937, and this movement continued until the end of the year. In both England and the United States, the latter part of 1937 was marked by a great increase in the purchasing power of money as measured in terms of stocks of corporations.

The relative extents of the major movements in this command over commodities at wholesale and retail are shown for the United Kingdom and the United States in the accompanying table on this page in which all data are compared to the base, January 1937, at which date the purchasing power is considered 100. (See also GOLD.)

(W. I. K.)

**Purdue University**, at Lafayette, Ind., is Indiana's Land Grant institution, created under the Morrill Act of Congress of 1862, granting to each State public



lands for the establishment of a university for the teaching of "agriculture, science and the mechanic arts." The Indiana general assembly on May 6, 1869, accepted a gift of 150 acres of land and \$200,000 in cash from John Purdue and other citizens of Tippecanoe county for establishment of the institution. The university received its first students in March 1874, and the first regular academic year began Sept. 16 of that year with a faculty of six and student body of 64. Enrolment as of Oct. 1, 1937, was 6,176, divided as follows: all engineering, 3,433; agriculture, 760; pharmacy, 161; science, 728; home economics, 666; physical education, 119; graduate students, 309. This is a gain of more than 12% over the previous year. For some years Purdue has had the largest engineering enrolment of any institution of higher learning in America. The faculty and staff now numbers over 650.

Within the past 12 months the new executive building and a second unit of the women's residence hall have been occupied; and contracts were awarded for two more sections of the men's residence halls, for an agricultural chemistry building, and for an addition to the horticultural building. Buildings now number 69 on campus and adjoining farms.

Experimental runways to test different kinds of surfaces were almost completed at the university-owned airport of 208 acres; a new project to test wearing qualities of different surfaces in ordinary highway traffic was started, and development of devices to help ward off static electricity from aeroplanes was begun. Testing of railway car wheels also was another new project inaugurated within the year, along with new studies in the field of nuclear physics; studying growth of plants without soil, using only gravel and a nutrient solution; testing of various kinds of lights to attract insect pests in orchards and corn fields. Another new project undertaken was one to test the wearing qualities of the various coverings given wire fences, both for farm and ornamental purposes. These projects were in addition to the several hundred other agricultural, engineering and pure scientific research projects which have been in progress or completed in years past.

New courses offered during the year included several in education and the creation of the Department of Education and Applied Psychology as a separate department within the institution and creation of the School of Metallurgical Engineering in connection with the School of Chemical Engineering.

**P.W.A.:** see PUBLIC UTILITIES.

## Pyrite or Pyrites.

World production of pyrite in 1935 reached 8,340,000 metric tons, only slightly less than the 1929 high, after having dropped to a low of 5,700,000 metric tons in 1932. Spain is the leading producer, having furnished 51% of the output in 1929, 37% in 1932, and 27% in 1935. In 1936 operation of the largest Spanish mines was seriously interrupted by the civil war when the region was occupied by the rebel forces. Among other producers, Japan has a rapidly increasing output that ranked second in 1934 and 1935, and has probably stood in first place since then, though this can not be confirmed until more information is at hand on conditions in Spain. In the next rank of producers, with outputs of 500,000–1,000,000 tons, are Italy, Norway, the Soviet Union and the United States; in the 100,000–500,000 ton group are Cyprus, Germany, Portugal, France, Greece, Canada, and Sweden, and a number of others have still smaller outputs.

The United States output of 556,000 metric tons in 1936, which was almost treble the 1932 low and 58% greater than the pre-depression high, although a record figure, was still insufficient to meet the demand, and was supplemented by imports of 436,500 tons; in the past, imports have been almost entirely from Spain,

but 1936 showed a marked drop in Spanish imports, which will probably be increased in 1937, as other countries are called on to supply the deficit in the normal Spanish output caused by the war.

A recent important technical development in the burning of pyrite is the so-called flash roasting process, in which the finely divided material is burned while suspended in a blast of air.

(G. A. Ro.)

**Quebec,** one of the original Provinces of the Dominion of Canada; area, 594,534 sq.mi.; population, according to the Dominion census of 1931, 2,874,255, estimated Jan. 1, 1938, 3,096,000. Capital, Quebec, 130,954. The only city with larger population is Montreal, 818,577. Of the Province's population 1,813,606 are urban, or 63%; 2,696,122 native born; only 178,133 foreign born.

Two types of trade unions are found in Quebec; the National Catholic Unions and the older International Unions. The former have a membership of about 50,000, while the membership of the latter is smaller. In 1937 the Workmen's Wages Act was passed by the provincial legislature. In brief, this act provides that any trade agreement between employers and employees may be made binding on all employers and employees in the same kind of industry within the district included in the original agreement. This can be done only by the Government after application of the employer or employees or the representative of either. The Fair Wage Act which became operative on and after Sept. 1, 1937 provides for the establishment of a Government Board, which on its own initiative or after hearing the report of a committee representative of employer and employees in equal numbers, may fix wages for minors under the age of 18 and may determine in general the working conditions of all employees in an industry. No wage lower than the minimum fixed for such minors shall be paid any employee. No employer may interfere with any of his employees who may desire to organize for collective bargaining, nor may any employer dismiss or discriminate against his employees on the ground that they are members of a trade union. Action against an employer under this last section requires the consent of the attorney-general of the Province. The net value of production in the province for 1934 was \$593,066,127 (£118,600,000) an increase of 17% over the preceding year. The gross value of agricultural products in 1935 was \$174,758,000 (£34,951,000); of manufactures \$821,020,796 (£164,204,000), an increase of over 100% over the preceding year.

On Aug. 15, 1936, the Liberal Administration of the Hon. A. Godbout was defeated by the Union Nationale and the Hon. Maurice Duplessis became premier and attorney-general of the province. The Hon. E. L. Patenaude is the Lieutenant-Governor. Quebec is represented in the Dominion Parliament by 24 Senators who are appointed for life and by 65 members of the House of Commons who are elected for five years or less.

**BIBLIOGRAPHY:** *Statistical Year Book; Annual Report of the Provincial Secretary and Treasurer.* (J. C. He.)

## Queensland.

A State of the Australian Commonwealth lying in the north-east and occupying 670,500 square miles. The State governor, representing H.M. King George VI is Sir Leslie Orme Wilson, G.C.S.I., G.C.M.G., G.C.I.E. Population (March 31, 1937), 984,824, forming 14.4% of the population of Australia. Capital, Brisbane; population (Dec. 31, 1936), 313,430. The premier of a Labour Government is Mr. W. Forga Smith.

**History.**—Parliament was opened by the lieutenant-governor on Aug. 10, 1937. Legislation in 1937 included Acts regulating air navigation, fauna protection, and State electricity concerns, and



amending the laws relating to public health, lands, and industrial conciliation and arbitration. Excessively dry weather was experienced in the southern agricultural districts during 1937. Public works in progress included the Story bridge over the Brisbane river at Kangaroo Point, and the Stanley river dam. Up to June 30, 1937, the Main Roads Commission had completed 3,879mi. of roads and 13mi. of bridges. Many important road links were completed during the year, both in settled districts and in areas in process of settlement. The report of the Royal Commission on the regulation and supply of electricity in the State was presented to parliament, and the Royal Commission on transport and harbour board problems also reported to the Government. The result of the International Sugar Conference was regarded as satisfactory to Queensland, whose production of bagged sugar in the 1936 season was 719,600 tons.

**Trade, Industry, and Finance.**—Production in 1935–36 was valued (gross) as follows: agricultural, £11,502,000; pastoral, £12,061,000; dairying and other farming, £7,443,000; mining, £2,430,000; forestry, fishing, trapping, £2,419,000; total, primary industry (gross), £35,855,000, (net); manufacturing industry (net value), £15,683,000. Numbers of livestock, Jan. 1937: 5,800,000 cattle, 20,125,000 sheep, 435,000 horses, 305,000 pigs (Jan. 1936). Unemployment fell to an average of 11,910, or 6.4% of those available for employment, in the first nine months of 1937, compared with 14,100 or 7.7% in 1936. Including relief workers, the percentage of unemployment in 1936 was 11.6. In order to encourage unemployed youths in towns to accept farm work, a scheme was introduced in 1937 for payment of wage subsidies according to age and experience. The budget for 1936–37 closed with a deficit of £280,190, the deficit having been originally estimated at £650,664. For 1937–38, estimated expenditure was raised from £16,815,228 to £17,377,313, and estimated receipts from £16,535,038 to £17,046,535, giving an estimated deficit of £330,778. The increase in expenditure was due mainly to the higher basic wage (costing £360,000), the increase in public debt interest and sinking fund (£139,000), and the discontinuance of the Commonwealth special grant (£72,000). Public works expenditure was estimated at £3,369,000 in 1937–38, including £2,219,000 for development and £1,150,000 for railways, buildings, and housing, against actual expenditure of £3,760,000 in 1936–37, including £2,527,470 for development and £1,232,830 for railways, etc. (H. V. H.)

**Quicksilver:** see MERCURY.

**Racing and Races:** see AIR RACES; AUTOMOBILE RACING; HORSE-RACING; TRACK AND FIELD SPORTS; TROTTING.

**Racketeering,** organized and systematic extortion of money by means of violence or fear, from legitimate business men and workers, as well as from illegitimate enterprises. The term is loosely misused to describe everything which is cheap or sharp, from simple frauds to business swindles. Such misuse leads to confusion of thought and tends to obscure the dangerous and socially demoralizing aspects of genuine racketeering.

The origin of the term "racket" is obscure. According to the most credible theory the word is derived from testimonial dinners and dances—sometimes political in nature. At the turn of the century political balls came to be known as "rackets." By suggestion of political favour in return for purchase of tickets or reprisal on failure to buy, dominant local political machines used the "racket" to raise funds. This led to imitation, in the extortionate sale of tickets by other organizations and later by hoodlums who sold tickets to functions that never took place. By a process of development the term "racket" came to be used to describe any form of systematic extortion.

Racketeering has become increasingly subtle in recent years and bears little relation to the depredations of the street gangs of previous generations.

Starting from the single extortion known as a "shake-down," it developed to the point where money was demanded upon threat of a spurious picket line, boycott, stenchbombs or violence. It progressed to the superficially legal form of using a trade association as a cloak for extortion. At present it occurs either as industrial racketeering or the commercialization of illegitimate enterprises.

The industrial racketeer has become the middle man in illegitimate relationships between groups of employers and labour unions. The extortion of money takes the form of direct "shake-downs" as well as "dues" and "salaries to officials." The more complex the form, the more difficult it is to detect the existence of racketeering. Almost every act of the industrial racketeer, except the specific threat or actual violence, is carried on under pretense of serving a legitimate economic function and under colour of legality.

In commercialized prostitution and narcotic selling, as well as such forms of gambling as bookmaking, policy, lottery and dice games, racketeering consists basically of predatory organizing by strong and vicious criminals. Small groups or units are welded into large, city-wide or even nationwide units paying tribute to the dominant gangsters. Threats and violence here play a larger part than in industrial racketeering but once subjugated, the victim derives valuable consideration from the racket in the form of protection from other gangsters. In addition, political protection is often accorded, together with the amassing of funds available for bribery and corruption.

The heads of rackets usually have little contact with underlings but direct them from well-appointed offices and luxurious residences. Under the chiefs are lieutenants, lawyers and accountants. Several rungs lower in the system are the men who make the threats and commit violence.

Leading racketeers often have well established political connections of such importance that apparent or real protection from criminal prosecution can be provided to underlings who are arrested. In exchange, the dominant local political party is provided with thugs for use on election day, or proceeds of the racket are shared with more important political leaders. Association between political leaders, business men and important racketeers is rendered less subject to open scandal because the racketeers usually maintain a cloak of semi-respectability as gamblers or even as business men. Furthermore, the most important racketeers have usually successfully avoided acquiring a substantial criminal record. Thus Capone at the height of his power was without any record of a criminal conviction until 1929. Luciano had been convicted of only two petty offences.

Luciano lived in the best hotels, posing as a gambler and associating with some people of fair reputation. Buchalter and Shapiro, alias Lepke and Gurrah, two of America's leading industrial racketeers, had no convictions for many years and were partners in several legitimate clothing firms. Waxey Gordon was a substantial owner in two large hotels and had an elegant apartment in a good residential section, his children attending expensive private schools.

With rare exceptions, leading racketeers successfully avoid publicity and remain comparatively unknown to the public. Once their power and importance are sufficiently established publicly, their usefulness becomes impaired and they are either prosecuted by the authorities or murdered by rivals.

While criminal parasites have preyed on society by systematic extortionate practices throughout the ages, modern racketeering has developed during the last 30 years. Opinions differ as to



the extent to which racketeering was promoted by bootlegging during the prohibition era in the United States from 1919 to 1933. This much is certain—that, by trafficking in a prohibited commodity, this type of crime, with its attendant corruption and violence, became a huge business on a national scale. Bootleggers developed their own enforcement methods, which were readily transferred to legitimate industries after the repeal of prohibition had made bootlegging less profitable. Furthermore, the necessary banking, business and political connections which were developed by bootlegging remained available and were even stimulated following repeal.

One of the serious aspects of modern organized crime is the demoralization of ethical standards of the community. In most industrial rackets at least one or two of the leading business men of the industry have encouraged or even sponsored the entry of criminals into the field. The tempting objective is usually illegal price-fixing, driving marginal producers from business, promotion of monopoly, or protection by gangsters from the activities of legitimate labour unions. Usually several such objectives are involved in a single enterprise. Skilled industrial racketeers on their own initiative have, on occasion, invaded and forcibly seized control of originally legitimate trade unions. Through officers acting under their direction, the racketeers have used the unions to drive business men into trade associations created and operated by agents of the racketeers.

Victims of modern racketeering are seldom willing to testify. So alarming are the threats of destruction of property and even of murder that business men and others frequently submit rather than complain to the law enforcement authorities. On the other hand, many willing victims submit because of financial benefits or business advantage to themselves and because of their own partial responsibility for the racket which truthful testimony would reveal.

(T. E. D.)

## Radio, Scientific Developments of.

Since it is hardly possible in a limited space to review developments in each of the many branches of radio communication, it will be necessary to consider only the more outstanding tendencies which have affected general progress during the past few years and during 1937 particularly. A large proportion of radio research during recent years has been directly or indirectly concerned with the difficulty of finding suitable wave lengths on which the rapidly increasing number of transmitters can work effectively. This difficulty affects all types of radio communication, and has inspired a great deal of work directed towards obtaining additional knowledge on the following problems:

(1) The general question of the propagation of waves and particularly the possibility of using wave lengths considerably shorter than those commonly used in the past, which have hitherto been considered unsuitable for practical application. (2) The reduction of the ether space occupied by each transmitter. (3) The operation of more than one transmitter on the same ether channel.

During the past 10 to 15 years a vast amount of scientific data has been collected concerning the behaviour of the ionosphere in relation to the propagation of what are called the "short" waves. This has more particularly applied to waves used for world-wide communication, that is, those between 12 and 80 metres. Such investigation can be divided into two parts, the first being of a more practical nature and consisting of careful measurements and observations which now make it possible to predict the possibilities of reception of a transmission on any wave length. The collection of such data has of necessity been spread over a considerable number of years, and had to take into

account the direction of transmission, the varying conditions arising from time of day, season of the year, and the condition of solar activity, the latter changing in regular periods of approximately 11 years. It may be said that this side of the work is approaching completion, but work still continues on the second part, concerned with the explanation of practical observations. This has consisted mainly of measurements of the height and characteristics of the reflecting layers of ionized gas, which have come to be called the "ionosphere." This has led to the conception of this gaseous region being divided into loosely defined layers at various heights, each layer possessing different characteristics and affecting wireless waves in accordance with their length. Considerable progress has been made during the past five years in this work, but conflicting theories still exist. A better knowledge of the ionosphere and its effect on propagation phenomena has made it possible to develop direction-finding apparatus giving greater accuracy and reliability at long distances, particularly during darkness. This is a matter of great importance to the conduct of long-distance air transport services.

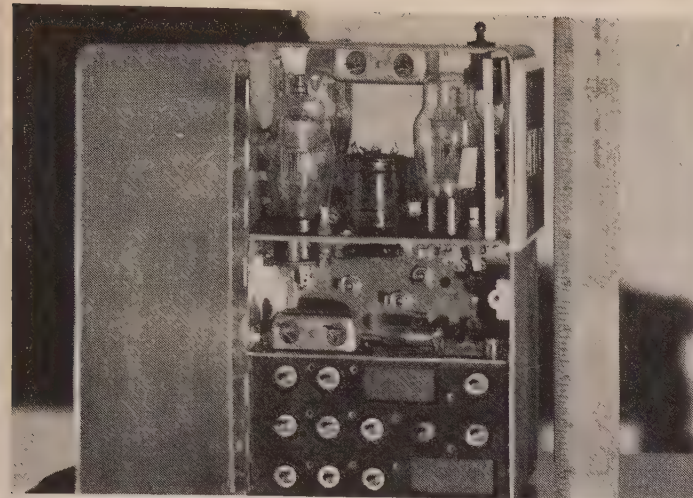
It is only within the past two or three years that serious and widespread attempts have been made to study the behaviour of wave lengths of less than 10 metres on a scientific basis. It was partly the necessity of finding more ether space for additional transmitters that has so greatly stimulated this work. In addition, the recent introduction of what is known as high definition television, which at present requires an overall band width of some 5 megacycles per second for wireless transmission, has made it essential to consider the only wave lengths on which such a transmission is practicable. At the end of 1937 there was general agreement that it is not possible to use wave lengths appreciably exceeding 7 metres for this purpose. Until quite recently it was thought that the direct ray from a transmitter using such a wave length would not be receivable beyond the horizon. It has been found, however, that the horizon does not form a natural limitation, and reception at considerably greater distances is possible, apart from any possible effect of reflection from the ionosphere.

The use of wave lengths of only a few centimetres has been developed to some extent for point-to-point communication, mainly to bridge rivers and comparatively narrow stretches of sea. Such waves have the particular advantage that it is possible to focus the radiation into a very narrow beam which, on the one hand, gives increased efficiency of transmission, at the same time providing a considerable degree of secrecy of communication.

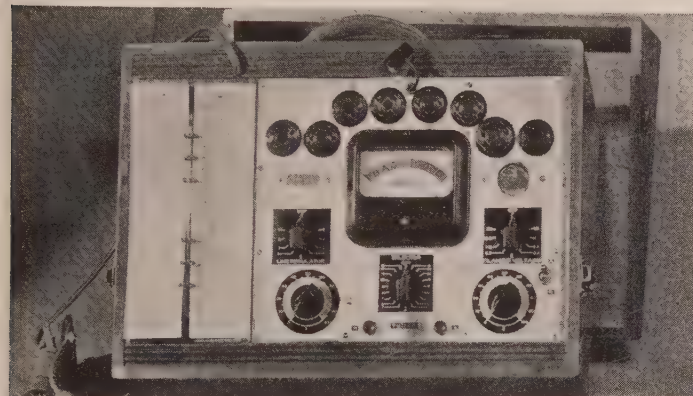
Wave lengths below 10 metres have been particularly studied by those interested in aircraft on account of the fact that the efficiency of propagation of such waves is high when there are few obstacles in the path, and because the apparatus necessary, in particular the antenna, can be of very small dimensions. The latter fact has also led to the study of possibilities for other mobile services, such as police cars and fire services. Another very important use to which these ultra-short waves have been put is for various types of navigational aids for aircraft, including "blind landing" devices for aeroplanes approaching an aerodrome in fog.

Arising from a study of the behaviour of wireless waves, considerable advances have been made in antenna design, particularly for wave lengths below about 600 metres. The waves most commonly in use throughout the world for broadcasting services lie between 200 and 550 metres. The chief limitation to the range of high-power stations of this type has been found to be due to the phenomenon of fading caused by interference between waves travelling along the surface of the earth and those reflected at night from the ionosphere. In order to minimize this effect, it has been found desirable to increase the strength of





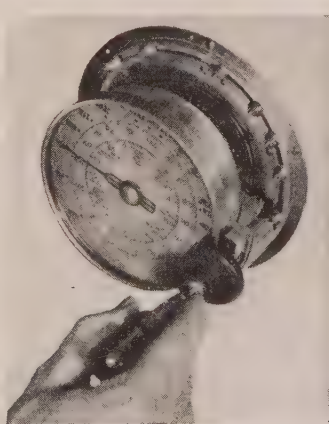
BEERMUG TRANSMITTER opened



RADIO TUBE TESTER that can be carried as conveniently as a suit case



PORTABLE TRANSMITTER for relaying radio broadcasts from convention floors, street crowds or other places impractical to reach by wire



CONE-CENTRIC TUNING SYSTEM which provides automatic, mechanical accuracy for proper tuning



DRIVERS IN A TROTTING RACE communicate with each other by means of miniature, portable, radio broadcasting transmitters

the ground wave by every possible means, and to reduce the upward travelling components which eventually become reflected and returned to earth. What are known as mast antennae have come into almost universal use during the past three years for all important broadcasting stations in the wave band mentioned above. The radiator in this case consists of a single insulated mast, the design of which varies very considerably. The principle in all cases is similar, and depends on the fact that the radiator has a physical height of approximately  $\frac{1}{6}$  of the wave length being transmitted.

For the short waves used for long-distance communication depending on reflection from the ionosphere, much research has been carried out on the efficient design of radiating systems which confine the energy to a definite beam projected at precisely the correct horizontal and vertical angles for maximum efficiency of reflection. In the case of point-to-point commercial stations, these beams are made just wide enough to ensure covering the receiving point at the distant end, while in the case of broadcasting stations intended for long-distance reception, the width of the beam is adjusted to cover the distant area aimed at, which in general necessitates the use of a less confined beam.

The problem of the reduction of the ether space occupied by each transmitter has been approached in two ways. The first has consisted in devising means of maintaining extreme accuracy of the wave length emitted by each transmitter. It is now common for a large broadcasting station to maintain an accuracy of the order of one part in 1,000,000, while in the case of smaller stations it has become normal to operate with an accuracy exceeding one part in 100,000.

The effect of stability generally is that wave length channels can be placed closer together without danger of interference, due to wandering carrier waves.

Similar, but less spectacular, improvements have been made in connection with mobile transmitters, such as those which are used by ships.

The second method of reducing the ether space occupied has been so far applied mainly to commercial telephone stations, and consists of suppressing the modulation frequencies on one side of the carrier frequency. Again, in some cases multiplex transmission has been adopted whereby one carrier wave is modulated by several groups of frequencies, each providing a separate service.

During the last few years, success has been achieved in connection with the synchronizing of several transmitters separated by distances as small as 150mi., where the carrier waves are locked together by some form of telephone line connection, so that they remain exactly, or very nearly exactly, in step. In such cases it has been found essential that the same program shall be radiated from all the stations in a group.

(See also ADVERTISING; AIRPORTS: *Safety*; BROADCASTING; TELEVISION.) (N. As.)

**Radiotherapy.** There are many diseases which can be successfully treated by means of X-rays or gamma-rays, but the most important, by reason of its widespread frequency and high mortality, is cancer. The cure of cancer is so dominant a problem today that the radiotherapy of non-malignant conditions must necessarily take second place. Most of these non-malignant conditions, however, such as ringworm, keloid scars, toxic goitre, tuberculous glands, actinomycosis, chronic mastitis, menorrhagia, respond well to such doses of radiation as entail no risk of permanent damage to normal tissues. It is quite otherwise with cancer, for which the dose of radiation necessary for the destruction of the malignant cells usually approaches and sometimes exceeds that which can be tolerated by the normal



tissues. Furthermore, while laboratory research into the biological effects of radiation is steadily gathering much fundamental information, it is seldom possible to apply directly the results of such research to clinical radiotherapy. In practice, therefore, methods of radiotherapy are still largely empirical, and since patients with cancer must be followed for at least five years before the results of any one method can be evaluated, comparison between different methods is a slow process. However, certain principles in the radiotherapy of cancer are now generally accepted: (1) The dose of radiation administered shall be expressed in the international physical unit called the roentgen (r). (2) In order to minimize the damage to the skin and normal tissues, multiple ports are used, the beam of rays being accurately directed towards the tumour through each skin field. (3) Since in general the normal tissues recover from the damage produced by a dose of radiation more quickly than cancerous tissues, the total dose is fractionated over a period of some three to 10 weeks, the interval between successive doses (usually 24 hours) allowing the normal tissues to recover relatively to the malignant tissue. (4) The lethal dose for a carcinoma varies from some 3,000r when administered over a period of three weeks, to 8,000 or 10,000r over a period of 10 weeks. (5) In order to obtain, at a deeply situated tumour, the highest possible percentage of the radiation delivered to the skin, the most penetrating rays available are used.

The time-intensity factor (the number of fractions in which the total dose of radiation is given, the interval between these fractions, the total period over which they are spread, and the intensity or dosage-rate at which each fraction is administered) allows of innumerable variations of technique in the administration of a given tumour dose. In spite of the able way in which Coutard maintains that a dosage-rate of 3-5r/min. is the most important single factor in the successful treatment of radio-resistant carcinomata, it will be many years before finality is reached on this question.

The penetrating power of a beam of rays increases as the average wave-length of the beam becomes shorter. The average wave-length of a beam of "hard" gamma-rays is  $10^{-10}$ cm., while that of the X-ray beams in general use today from tubes operated at 200kv. is  $9^{-10}$ cm. Since the wave-length of X-rays is inversely



PRELIMINARY HAND-SORTING of radium ore at Eldorado, the world's richest radium mine, on Great Bear lake near Radium City, Canada

proportional to the tube voltage, much technical research in recent years has been directed towards producing X-ray apparatus operated at "super-high" voltages. Three such apparatuses working at a million volts, were brought into clinical use during 1937 (the Sloan high-frequency generator at Columbia, the Van de Graaff static generator at Boston, and the Metropolitan-Vickers direct-current generator in London), while there are now a number of apparatuses working at 500-800kv. in various countries. Preliminary clinical reports suggest that the normal tissues are less injured by, and recover more quickly from, a given physical dose of "super-high" voltage X-rays than from the same dose of 200kv. X-rays, while the cancer is relatively more injured.

The early clinical results thus appear to be better with higher voltages, but it will necessarily be some years before large enough five-year statistics are available for definite conclusions to be drawn.

As regards the results of radiotherapy, those available today refer to patients treated five years ago or more (and many advances have been made since then), and refer also mainly to cancers which were too advanced or too inaccessible for surgical removal.

On such unpromising material, the larger radiotherapeutic centres can show some 10% five-year cures; but when earlier cases which are still surgically operable are treated by radiotherapy, its results are in most cases superior to those of surgery; e.g. carcinoma of the cervix uteri, 50% (Regand); cancer of the tonsil, 37.5% five-year cures (Berven).

Such results make it probable that even so accepted an operation as that for removal of the breast for cancer may be replaced in the next few years by radiotherapy, just as has been hysterectomy for carcinoma of the cervix.

In addition to the steady progress in radiotherapy as outlined above, experimental work with neutrons suggests that they may also in due course become a valuable therapeutic agent. The invention of the cyclotron by E. O. Lawrence has made available for experiment beams of neutrons comparable in intensity to the X-ray beams in clinical use, and preliminary biological results have shown that neutrons are several times more effective than X-rays in equivalent doses. Furthermore, neutrons are the most powerful agent known for making elements artificially radioactive, so that it may be possible in the future to produce within



ELDORADO MINE, 26 miles from the Arctic circle, produces  $3\frac{1}{2}$  grams of radium a month and has cut the price from \$70,000 a gram in 1933 to \$40,000 in 1937





**DUST-MASKED WORKERS** bag 11 tons of uranium concentrates, reduced from 550 tons of ore and from which one gram of radium is recovered

the cancer itself sufficient radioactivity to cause its destruction. (R. PH.)

**Radium.** When the world's supply of radium was obtained from the comparatively lean ores of Czechoslovakia, the United States, Australia and Portugal, the price of the product was \$100,000 or more per gram; the discovery of much richer ores in the Belgian Congo brought the price down to \$70,000, and with the collapse of world buying power in 1929 it was reduced to \$50,000; recently new deposits of unparalleled richness have been discovered in Canada, and since the construction of a refinery for their treatment the price has been cut to \$40,000. Production of refined radium salts began in

Canada in 1933, with 3.0 grams of radium content, but later additions to the refinery have greatly expanded the operations, and at the end of 1936 production was at the rate of 2.5 grams per month; in the year 1937, the production of the plant totalled about 30 grams. The entire output is shipped to England for measuring and packing into treatment needles, after which much of it is returned to Canada for sale. Although the radium-bearing ores of Colorado and Utah have been mined on an increasing scale during the past two or three years, this is primarily for their vanadium content, and little radium is recovered. (See also **CHEMISTRY, APPLIED**; **VANADIUM**.) (G. A. Ro.)

**Railroad Accidents:** see **DISASTERS**.

**Railroads.** The railroad year 1937 in the United States was one in which eight months of steady improvement in earnings and hopeful outlook were followed by four months of sharply declining traffic and of serious apprehension. During the first half of the year the general view was that after seven lean years the period of famine was over and that the years of plenty had begun. The sudden September drop in freight revenues, and the arrest of the upward trend in passenger revenues, upset forecasts and programs, and necessitated retrenchment in both operating and capital expenditures. It accentuated the financial distress of the railroads which had just escaped bankruptcy and added to the degree of uncertainty as to the future.

On the expense side the situation was affected adversely by nationwide wage increases, the result of negotiations between the railroads as a whole and the labour unions collectively. The negotiations were begun before the recession in business activity was apparent but the higher wage rates became effective after the drop in railroad earnings had set in. On the basis of the number of employees in service in 1937 the wage increases added about \$130,000,000, or nearly 7%, to the annual wage payments of all railroads.

During the early part of the depression the Interstate Commerce Commission had granted, for a limited period, what were known as emergency surcharges. From time to time the period in which such surcharges could be made was extended; but at the close of 1936 the Commission decided that an emergency no



**A TINY GLASS TUBE** holds \$4,000 worth of radium, 100 milligrams

longer existed and the surcharges, with their annual additional revenues of \$120,000,000 (about 3.6%), were withdrawn. Shortly thereafter the railroads appealed to the commission to restore permanently a part of the emergency rates and in the spring and fall of 1937 the Commission authorized increases which were estimated to yield \$50,000,000 (about 1.5%) yearly. By that time the recession had set in, certain wage increases had been granted, others were pending, the prices of fuel and other materials and supplies had advanced, and the Commission in passing upon and granting the petition in part virtually invited the railroads to come back for more. The implied invitation was immediately accepted and in November the railroads petitioned for authority to increase freight rates about 15% and, in certain sections of the country, to advance the rate for passengers in coaches from 2¢ to 2½¢ per mile. The hearings began in Dec. 1937, and decision is expected in Feb. 1938. If granted in full the additional revenues will probably just about cover the higher costs of labour and materials.

At the beginning of 1937 93 railroad companies, operating about 30% of the total mileage, were in receivership or were operated by trustees. Three additional companies were added during 1937. Amendments to the Bankruptcy Act in 1933 and 1935 were intended to expedite railroad reorganization. They have not accomplished their prime purpose, but considerable progress has been made. The outlook at the close of 1937, however, was that the reorganization plans then under consideration would require revision to take account of reductions in prospective earnings, and that several other railroad companies which have been



**URANIUM CONCENTRATES**, transported 3,500 miles to Port Hope, Ontario, are boiled in acids to separate the radium



close to bankruptcy will be forced into it unless business conditions improve and rate increases are granted.

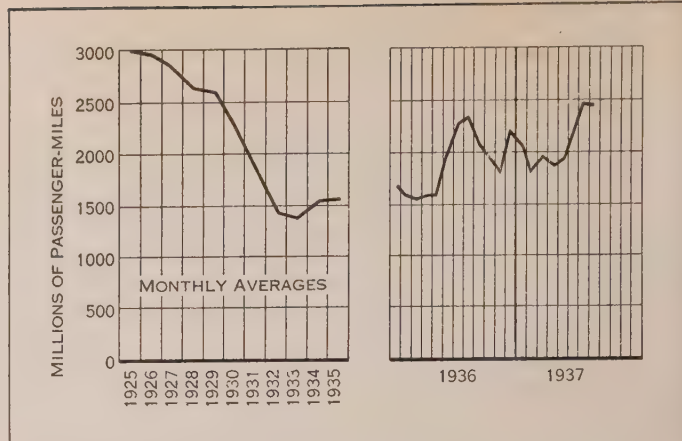
Railroad gross revenues reached their peak in 1929 when, for class I roads (those earning \$1,000,000 or more) they were \$6,280,000,000. In 1933, the worst year of the depression, they fell to \$3,095,000,000. By 1936 they had rebounded to \$4,053,000,000. If in 1937 the revenues in the second half had been as good as they were in the first half, the total for the year would have been about \$4,515,000,000, but because of the slump in the second half they will be but little better than in 1936.

The relationship between net railway operating income and the investment in road and equipment (expressed as "per cent return on investment") is a significant indication of earning power. In 1929 it was 4.81%; in 1934 it was 1.78%; and in 1936 it was 2.57%. During the first nine months of 1937 it was at the annual rate of 2.47% and for the full year it will be somewhat less. Considering all railroads collectively as a single system the income available for interest and other fixed charges will be but slightly in excess of those charges and practically nothing will be left for the stockholders.

In the operating features of railroads the year 1937 has witnessed further substitution of modern streamline equipment for locomotives and cars of conventional design, but the extent of such substitution has been small. The development of the Diesel locomotive has been matched by further improvements in steam locomotives, and some of the railroads are meeting the popular demand for modernity by converting steam locomotives into streamline design. In general the trend toward higher speeds, both in the freight and passenger services, and further improvements in quality of service have continued, and the design of passenger cars is along lines of more comfort, convenience and beauty.

The construction of new railroad mileage in 1937 was negligible but there have been many abandonments of branch lines which have long been unprofitable. A single example is found in the case of the New York, New Haven & Hartford railroad, under reorganization since Oct. 1935. In 1936 and 1937 the company was authorized by the Interstate Commerce Commission to abandon 97mi. out of a total of 2,034 and the Commission's examiner has recommended the abandonment of 177 additional miles.

This reference to abandonments suggests one of the major problems of railroads—the high degree of obsolescence and unused capacity. By far the greater part of the existing railroad mileage was constructed when railroads had a virtual monopoly of inland transportation and the policy of most of the railroads up



CLASS I RAILROADS, United States: Revenue passengers carried one mile

to the period of the World War, and in smaller degree between 1920 and 1930, was to keep their facilities and equipment ahead of the demands of increasing traffic. The potential threat of high way transportation was not realized early in the post-war period, and now that its full force is apparent, together with the competitive effect of the rejuvenated inland waterways and the rapidly developing aeroplane service, the railroads find themselves with facilities and equipment which in disturbing degree are not used nor useful. These surplus facilities and equipment are carried as assets for capitalization, largely in funded debt, for which no sinking funds have been set up. The railroads, therefore, are not only required to meet interest charges on bonds secured in part by non-productive property but also will have the heavy burden of meeting the principal payments at maturity.

A brighter side of the situation is found in the new spirit of the railroad executives. They are showing more resourcefulness in dealing with competition, in modernizing their sales and operating policies, and in improving their public relations. There is evidence that the competitive peak of highway transportation has been passed. The trucks and the buses are now being subjected to regulation in some degree equivalent to that imposed upon railroads. The general public is showing a more definite realization of the importance of maintaining the railroads as a vitally essential part of the national transportation system and has been sympathetic and helpful in its attitude toward the pending applications for authority to increase rates. (See also INTERSTATE COMMERCE COMMISSION; LABOUR ARBITRATION.) (W. J. C.)

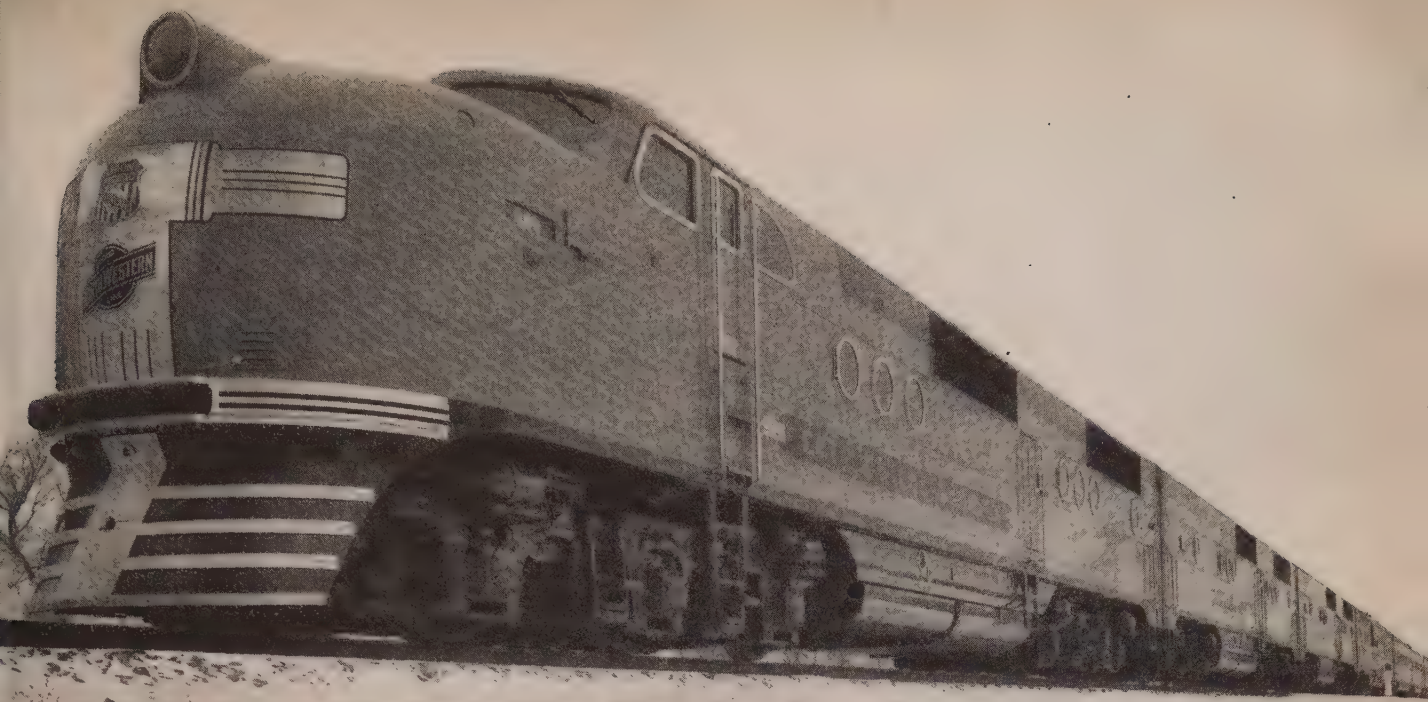
**Great Britain.**—The year 1937 witnessed the opening of the electrified services between London (Waterloo) and Portsmouth by the Southern railway and the new high-speed "Coronation" trains between London (King's Cross) and Edinburgh by the London & North Eastern railway, a direct result of the financial success of the same railway's streamlined "Silver Jubilee" express between London and Newcastle, inaugurated in 1935. The "Silver Jubilee" in two years ran over 260,000mi. or 2,680mi. each week, at an average speed of over 67m.p.h., and, like many of the world's highest speed trains, its reputation for popularity, and punctuality is excellent. The latest high-speed streamlined express is the London & North Eastern railway's "West Riding Limited," which commenced service in Sept. 1937. Another similar type of train, but of slower speed, giving dining-car service to every seat, is the London & North Eastern railway's "East Anglian," running between London, Ipswich, and Norwich.

Useful as may be these individual high-speed trains, a general policy of acceleration is perhaps of even greater importance, and, in connection therewith, the entire recasting in 1937 of the London Midland & Scottish railway's (Midland Division) expresses between London, Leicester, Nottingham and Sheffield, may be



LONDON AND NORTH EASTERN RAILWAY LOCOMOTIVE "Commonwealth of Australia" on the "Coronation" express





DIESEL-MOTORED, STREAMLINED "City of Los Angeles," the 17-car train running between Chicago and California over the North Western and the Union Pacific railroads

quoted, or the Southern railway's hourly electrified services between London and Portsmouth which virtually doubled the frequency offered by the steam service now replaced. The Great Western, for many years noted for its high speed achievements, placed in service in 1935 the "Bristolian," thereby reducing materially the time between London and Bristol, and its "Cheltenham Flyer" continues to be one of the world's fastest trains.

To achieve these steadily increasing speeds with due regard to economy in fuel consumption, large numbers of new locomotives have been required, and in their policy of standardization the British railways have placed no fewer than 6,787 steam locomotives in service since 1923, the year the British railways were amalgamated into four large systems. The total steam locomotive stock at the beginning of 1937 was 19,817 as compared with 11,817 in 1923; on the other hand, electric motor vehicles have risen from 631 to 1,536, entirely due to the extension of electric traction on the Southern railway.

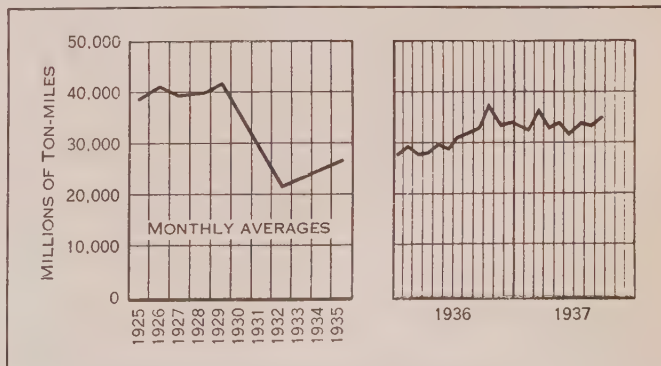
It is estimated that the work done in 1937, as measured in terms of passenger-miles and freight ton-miles, will closely approximate to the figures for 1923; thus similar work is being done with a much smaller number of motive power units. On the other hand, the gross receipts derived from passenger and freight traffic were, in 1936, 19% below the 1923 figure, but this was largely offset by a 19% decrease in the comparative expenditures. The railways' ownership of cross-Channel steamer services, docks, and hotels did not prove as remunerative in the latter year, with the result that the net revenue, namely, the sum available for payment of interest on capital, was only £35,700,000 in 1936, contrasted with £45,600,000 in 1923, or 3.27% expressed as return on capital in place of 4.40%. The results for 1937, when available, should show considerable improvement on 1936.

Consistent progress has been made during ten years in the renewal of running lines in accordance with the standards decided upon after the amalgamations of 1923. Recent and noteworthy developments include the use of a two-bolt fishplate in place of the much more expensive and heavier four-bolt fishplate; the employment of rail lubricators to lessen wear on curves, the careful attention to the superelevation on approaches to curves to ensure high-speed running with comfort and the building up of worn crossings by means of welding. The London & North Eastern rail-

way has made experiments with long rails of 120ft. and the Southern railway has laid, in certain tunnels, rails of 180ft., formed by welding three standard 60-ft. rails together.

The tendency in passenger coaches has been to employ steel more extensively both in strengthening the underframe and the vestibules; it is also used for the elliptical roofs and for the thin external panels. Of a modern British carriage which weighs about 30 to 32 tons, approximately 75% to 80% is steel. Mass-production methods are employed for locomotive, carriage, and wagon building. Concentration has been made on the production of standard type locomotives, but among new designs may be mentioned the London Midland & Scottish railways "Princess," Pacific type class, the streamlined 3-cylinder "Pacific" and the Mikado type "Cock o' the North" engines on the London & North Eastern, the very efficient "Castle" class on the Great Western railway and the successful "Schools" class 4-4-0 type on the Southern railway.

Legislation in 1928 permitted the railways to acquire a financial interest in road operating concerns, and about £9,000,000 has been invested in omnibus companies and well over £2,000,000 in cartage companies, for instance, Pickfords and Carter Patersons. All railway receipts from competitive sources are now pooled and, in addition, all passenger receipts in the London area are pooled with the London Passenger Transport Board. There has been a steady downward trend in the general level of railway charges owing to the grant of additional exceptional rates and reduced fare facilities, but an increase of about 5% took place in Oct. 1937,



CLASS I RAILROADS, United States: tons of freight carried one mile





DEMONSTRATION OF A CENTURY of British railway progress. Left to right: the "Lion," 1837; "Coronation," 1911, commemorating the crowning of George V and Queen Mary; and "Coronation," 1937, that of George VI and Queen Elizabeth

after permission was granted by the Railway Rates Tribunal. The only important exceptions to this increase were fares in the London area and charges for very short distances.

**France.**—The year 1937 will prove outstanding in French railway history because of the decree of August 31, which provided for the formation of the French National railway company as from Jan. 1, 1938. This new company is an amalgamation of all the main-line railways, both the company owned and operated Est, Nord, Paris Lyon et Mediterranée, Paris à Orléans and Midi systems, as well as the two State owned and operated railways known as the État and the Alsace & Lorraine. The French Government holds 51% of the shares of the new concern, which has a capital of 1,419,412,000 francs, but the companies still exist and remain in control of their so-called *domaines privés*.

Energetic steps, including the raising of fares and freight rates, were taken to reduce the long-growing deficit which had accumulated to over 26,000,000 francs by the end of 1936. Technically, the French railways are well to the front, both in regard to rolling stock, permanent way and signalling, whilst a special characteristic has been the rapidly extending use of railcars, some of a very high-speed nature, which total over 500 units. The main line from Paris (Montparnasse) to Le Mans was electrified in June 1937, as was later in the year the important suburban line from Paris (Luxemburg) to Massy-Palaiseau. The work of M. Chapelon of the P.O., in improving steam-locomotive design and efficiency, has placed France in the van of progress in traction matters, and the P.L.M. has acquired one of the largest Diesel locomotive units in Europe.

**Germany.**—Early in 1937, an important change in the organization of the German railway was announced with the appointment of Dr. Julius Dörpmüller, the general manager, as Minister of Transport. Whereas all methods of transport now come under the direct control of this minister, the new organization ensures that there is a high degree of co-ordination between the rail, road, water, and air services. Since the construction of the *Reichsautobahnen*, or motorways, has been entrusted to officers of the German railway, and the motorways are used extensively by German railway fast buses and trucks, the centralization of direction has been carried much further than in other countries. The welcome recovery in trade and industry has enabled the German railway to continue on a large scale its program of improvements covering both the operating and technical depart-

ments, and the financial results for 1937 will show a more satisfactory position than in 1936, when the ratio of operating expenditure to gross receipts stood at 88% and 95½% in 1935.

**Holland.**—High-speed Diesel trains are now operating extensively between Amsterdam, Utrecht, Rotterdam, and Eindhoven, whilst the Utrecht, Amsterdam, Rotterdam triangle is being converted to electric traction.

**Italy.**—Extension of electric traction proved the outstanding feature of State railway progress in 1937; specific mention may be made of the section from Naples to Reggio. New streamlined Diesel and electric trains were placed in service, permitting many services, such as Bologna, Florence, Rome, and Naples to be accelerated.

**Scandinavia.**—Of vital importance to the Danish State railways was the opening of the Storstrøms bridge in Sept. 1937, 10,535ft. long, the largest over-water bridge in Europe, following, as it did, the completion of the Little Belt bridge, 3,865ft. long in 1935. A third big bridge, the Odde Sund, about 1,650ft., is to be opened in 1938. These bridges, together with the use of high-speed Diesel trains of three or four cars, have improved internal and international railway services in Denmark.

In Sweden, the 81½-mi. Inland Line from Kristinehamn northwards to Gällivare was in 1937 opened throughout by the State railways, and conversion to electric traction still goes on steadily, the latest sections under conversion or planned are between Änge, Storlien, and Boden, and from Gothenburg to the Norwegian border. Norway is still among the few countries constructing main-line railways.

**Asia.**—In India, probably the most important event in 1937 has been the report of the Indian Railway Inquiry Committee recommending various changes in the policies to be adopted in regard to railways and their relationship to the finances of the Central Government. India and Ceylon are making experiments with Diesel traction which has already been proved satisfactory in Siam. The Burma railway system is now separated from the control of the Indian Railway Board.

Four decades' work of planning and railway construction in Indo-China has resulted in the completion of the Saigon-Hanoi line of 1,100 miles. In China, itself, and Japan, as well as in south Manchuria, railway progress has been temporarily stayed by unsettled political conditions, but the ex-Chinese Eastern railway has been converted to standard gauge from the wider



Russian gauge.

A further link, namely, from Nisibin to Tel Kotchek, has been completed in the line planned to connect the Iraq and Turkish State railways.

Steady progress is being made with the Iranian railway commencing at Bundar Gaz on the Caspian sea, and destined to reach the Persian gulf at Bundar Shapour via Teheran and Hamadan. There is also a railway on the Russian gauge from Erivan to Tabriz. The Soviet railways in Asia have been extended, and much mileage has been doubled.

**Africa.**—The Egyptian State railways have placed in service several Diesel railcars notably on the new direct line between Cairo and Suez, also between Cairo and Port Said, and Cairo and Helwan. A new branch line was completed in record time, stretching westward to Mersa Matruh near the Libyan border.

In West Africa, the Gold Coast and Sierra Leone Government railways have achieved better financial results through trade recovery, particularly in cocoa, palm kernels, and ore. The new French line has been opened to Brazzaville. The Benguela railway was completed throughout in 1931, thus opening up a new route between the Atlantic ocean and Central Africa.

In East Africa, the Kenya and Uganda railways have benefited from good traffics and economical operation. The most notable event of recent years was the completion of the Zambesi bridge in 1934, thereby connecting Nyasaland with Beira and avoiding ferry services at Chindio. The bridge itself, 12,064ft. long, cost about £1,400,000, but the approaches more than double this figure.

The prosperity of the South African railways and harbours administration during the years 1935-37 has been phenomenal, and rolling-stock has had to be ordered and built in large quantities to carry the heavy traffic offering. A total of 559 route miles, or 1,064 track miles, will be operated by electric traction in 1938.

**Australasia.**—In South Australia, a new line was opened by the Commonwealth railways between Port Augusta and Port Pirie, thereby eliminating the break of gauge at Terowie, and reducing materially the journey time between Adelaide and Western Australia. In Victoria, the new "Spirit of Progress," an all-metal air-conditioned train, has set a new standard in comfort as well as providing an accelerated service from Melbourne to Albury on the New South Wales border. New South Wales is making experiments with Diesel traction on the Broken Hill and other lines, while in all the States, trade recovery has enabled the railways to earn a much more satisfactory return on the capital invested in the systems.

In New Zealand, railway progress has been particularly noteworthy. Internal-combustion engined railcars have been found very satisfactory on light traffic lines, the new station at Wellington provides many unique features. A number of important new links connecting the various sections of line, for instance, from Napier to Putorino, and new Pacific-type locomotives have enabled considerable improvements to be effected in the train services.

**Notable Runs.**—The outstanding feature of railway progress since 1930, in spite of the world trade depression, has been the rapid advance in speed throughout the United States and western Europe. The German railway with its "Flying Hamburger" and the American railways with their Union Pacific and Burlington "Zephyr" streamlined trains of 1933 may claim to be the pioneers, but, whilst many of these and succeeding trains have achieved world fame, the general speeding up of large numbers of important passenger and freight trains is of even greater social importance. The period 1933-38 will definitely be regarded as a landmark in the realm of railway acceleration. The aim of many American and European railways is to bring the level of their express train speeds up to 60m.p.h., unless the distance between station stops is

too short to permit of adequate acceleration and braking.

To achieve the highest inter-station speeds now regularly scheduled, most of the world's fastest trains are strictly limited in weight and, consequently, in carrying capacity. Any table designed to show the world's highest speed railway runs must necessarily become rapidly out of date, as timetable changes are usually made twice yearly. Many such trains only run on certain days of the week, others run in the summer only, most of them are streamlined in varying degrees, and many of the fastest use the Diesel engine as the source of traction. In continental Europe some of these trains consist of one, two, or three cars only, and, therefore, are strictly limited in their number of seats.

The following table gives data as to certain of the fastest trains in the world operated regularly during 1937. Many railways impose strict limits as to the maximum speeds to be attained. The British railways are an exception to this rule, speed limits being imposed only at certain places. To obtain a throughout average speed of, say, 70m.p.h., it may be necessary to run several miles at any speed between 80 and 100m.p.h. In contrast to these regular runs, ultra-high speeds have occasionally been obtained on test runs, for instance, 124m.p.h. by a steam-hauled train between Berlin and Hamburg in 1936 and 113m.p.h. by the London & North Eastern railway and London Midland & Scottish railway in 1936 and 1937 respectively.

How greatly the railways of the United States have outstripped European railways in speed achievements since 1933 may be seen from the following tabulation:

Approximate Daily Mileage of Railway Runs at High Speeds

	70 m.p.h. and over	60 m.p.h. and over
Belgium . . . . .	..	839
Denmark . . . . .	..	741
France . . . . .	2,016	14,678
Germany . . . . .	1,504	8,235
Great Britain . . . . .	730	11,038
Italy . . . . .	131	1,317
United States . . . . .	3,194	37,860

(C. E. R. S.)

**Rainfall:** see METEOROLOGY.

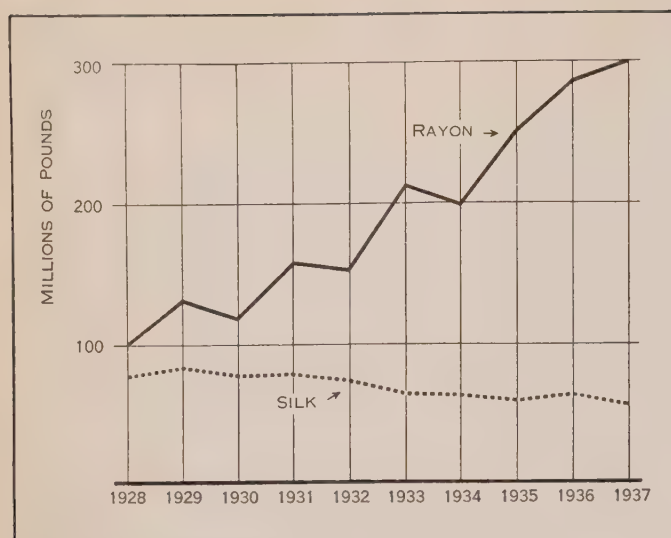
**Rapid Transit:** see ELECTRIC TRANSPORTATION.

**Rates of Exchange:** see EXCHANGE RATES.

**Ravel, Maurice** (1875-1937), French composer, was internationally known through such works as *Daphnis et Chloe*, *Pavane pour une Infante Défunte* and *Bolero*. Noted for his ability at instrumentation, he composed opera, ballet and chamber music as well as pieces for piano, voice and orchestra. An account of his life and works may be found in the *Encyclopædia Britannica*, vol. 18, p. 997. Increasingly popular in recent years, he toured the United States in the 1927 season. In 1934 he became director of the American Conservatory of Music at Fontainebleau, but was forced to drop his activities because of ill health which resulted in his death in Paris, Dec. 28, 1937.

**Rayon.** Under the rules promulgated by the Federal Trade Commission of the United States and which came into operation in Oct. 1937, rayon is defined as a "manufactured textile fibre or yarn produced chemically from cellulose or with a cellulose base, and for thread strands or fabric made therefrom, regardless of whether such fibre or yarn be made under the viscose, acetate, cuprammonium, nitrocellulose or other process." This definition is modified in some countries, but as all man-made continuous filament textile threads sold on a commercial scale are produced by one or other of the four processes mentioned, the





RAYON AND SILK CONSUMED in the United States

definition may be taken as substantially correct for all nations.

The improvements effected in rayon during recent years are amazing, but it is not claimed even yet that the ideal textile fibre has been produced. The main objects of research today are to give it the warmth of wool or silk, and the strength of cotton, as well as to improve its elasticity and to combat the tendency to crease. Rayon is now being made, of a finer denier per filament than that of silk, and one type at least has been produced which is as strong as cotton. In Great Britain, one company is making elastic threads on its machinery. Three-quarters of the rayon produced goes into woven fabrics, just as three-quarters of the world's raw silk is used for hosiery, and rayon is now being used for the casings of motor tires. Further, it was a rayon sail which helped the "Ranger" to win the race for America's Cup. A special form of rayon influencing the whole of the textile trade is staple fibre, a yarn spun from short lengths of the continuous filament rayon, which has made rapid progress, as a substitute for, and in conjunction with, cotton and wool, and for producing speciality yarns and fabrics.

The raw material for rayon production has up to now been cellulose, but recent attempts to use as alternatives organic polymerization products are important. The use of casein for textile threads is not new, but the process has only recently been developed commercially. The estimated production of the Italian product "lanital," the chief type of casein yarn, for the 12 months ending Dec. 31, 1937, is 2 million kilos, and the production rights have been acquired for the United States, Great Britain, and other countries. From it, every class of fabric, from the flimsiest knitwear to heavy overcoatings is made.

The estimated world production of rayon in 1937 is 1,110 million lb. compared with 1,015 million lb. in 1936. The estimated production of rayon and staple fibre in the principal producing countries is:

	Rayon (in 1,000lb.)		Staple fibre (1,000lb.)	
	1936	1937	1936	1937
Japan . . . . .	277,000	320,000	45,800	130,000
United States . . . . .	277,625	300,000	12,400	17,500
Great Britain . . . . .	116,800	120,000	26,200	29,000
Germany . . . . .	105,000	117,000	85,000	150,000
Italy . . . . .	87,000	97,000	110,480	160,000

(See also CHEMISTRY, APPLIED; SILK AND SILK MANUFACTURE.)  
(W. HU.)

**Rearmament.** After the World War the British forces were rapidly reduced, and the country returned to the traditional system of voluntary enlistment. The army was brought back to less than its pre-war size, which had naturally been much smaller than the conscript armies of the Continent. The air force, which had been built up to the highest level of any by the end of the war, was reduced to a skeleton—from 185 squadrons to 28, of which only three were available for the defence of the home country. With the Washington Treaty Britain gave up her long-standing claim to predominance on the seas, and agreed to a condition of parity with the next strongest naval power. But in 1923 a state of tension developed with Britain's former allies, when the French marched into the Ruhr. The British, making plain their dislike of this peace-time invasion of German territory, felt a strong sense of personal discomfort when they awoke to the fact that a considerable part of France's 126 air squadrons were assembled within reach of their own coast.

The outcome was the announcement by Mr. Baldwin in 1923 that, apart from overseas requirements, British air power must include a home-defence force of sufficient strength adequately to protect the British people against air attack by the strongest air force within striking distance of England. He stated that the force was to consist of 52 squadrons, to be created as quickly as possible. The expansion started promptly, but was checked in 1926 when still a long way from completion. Three years later the official spokesman of the air ministry disclosed to Parliament that Britain had sunk to fifth place among the world's air Powers. Yet the incomplete program was again suspended, first to meet the economic crisis, and then to meet the hopes of a general limitation raised by the disarmament conference which assembled in 1932. During these years all service expenditure had been steadily pared down.

The strengthening and re-equipment of the British defences continued to be postponed so long as some hope, if a diminishing hope, hung on the Disarmament Conference—although well before this the continental powers and Japan had obviously begun rearmament. The pace of this quickened with the advent of the Nazi government in Germany and its unconcealed measures. Eventually the British government took account of the danger, and made a detailed examination of the state of their own forces. The immediate result of this enquiry was that in July 1934 the government adopted a five-year program for increasing the air force, and raising the home defence part of it to 75 squadrons. They were soon led to quicken their step, and shorten the time of their program, owing to evidence of Germany's rapid development in the air and the expansion of other air forces. Ground defences against air attacks were also increased. Two territorial infantry divisions were converted into anti-aircraft troops, to man a long belt of defence running from the south coast up the east coast, so that it would cover the north-country industrial areas as well as London. A research committee of scientists was also formed to study new means of countering attacks. At the same time that this immediate defence of Great Britain was thus taken in hand, extra money was provided for beginning the modernization of the army and navy.

The new program had barely been decided when a new series of shocks caused its upward revision. In March 1935 Germany announced her reintroduction of conscription and the formation of an army 50% larger than the French. It was followed by Hitler's intimation, to the British ministers who had gone over to Berlin for friendly negotiations, that Germany already possessed parity in the air with Britain and was aiming at parity with France—which meant a superiority to the prospective British air force. If there was some doubt about this first assertion, his second was



plain. The sequel was that in May 1935 the British government decided to raise its own intended air strength by 50 squadrons, and to have a home defence of 1,500 first-line machines within the next two years. This involved the training of 2,500 new pilots as well as of 20,000 other personnel. Although still hoping for any agreed limitation, the British government was no longer content to let preparedness wait on hope.

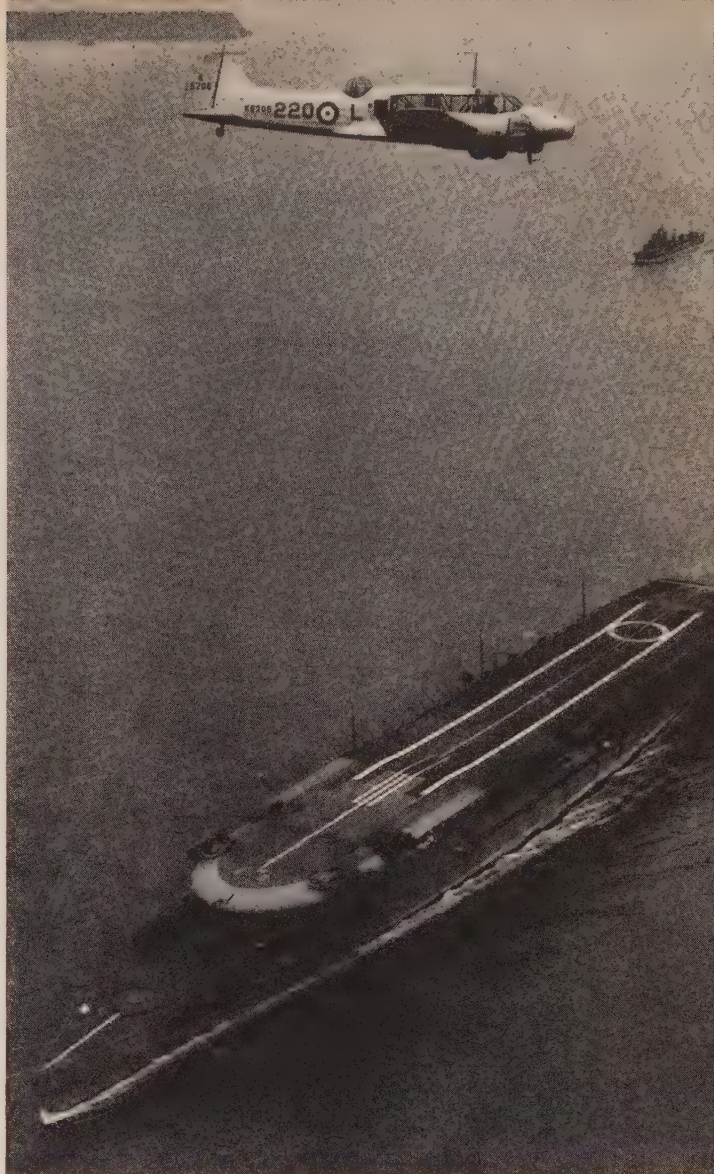
The process of expansion suffered some disturbance from the international crisis caused by Italy's invasion of Abyssinia. The emergency reinforcement of the forces in the Mediterranean was a severe drain on home resources, which emphasized the consequences of past neglect and revealed defects in the planning. After a vigorous campaign initiated in *The Times* which found wide support, the government yielded to the weight of public opinion, and in March 1936 appointed a minister for the co-ordination of defence, who would act as the prime minister's deputy on the Committee of Imperial Defence, preside when necessary at the meetings of the chiefs of staff of the three services, and would also be in supreme charge of the supply organization and industrial planning. This was a step forward, if it did not go as far as was desirable.

Sub-committees have been set up to deal with the different items of munition supply, with the provision of raw material and its manufacture, with man-power, food-supply, and grain storage, as well as with such questions as the protection of merchant shipping, the development of anti-aircraft defence, and precautions for the protection for the civilian population in air raids. A detailed survey has been made of the industrial field, to examine and clarify the material, operative, and technical resources of the country. Hundreds of engineering firms have been inspected to see whether their plant is adaptable to munition production in war-time. Production for present needs, however, has been delayed by lack of the necessary machine-tools and gauges.

With the air force the interruption caused by the Mediterranean emergency was soon overcome, if not overtaken. The production of new types of machines, of much higher performance and greater range, has been speeded up so much that they are being delivered long before the date originally contemplated. The intended strength of the force at home has also been raised to 1,750 first-line aircraft, exclusive of the Fleet Air Arm. The creation of the new squadrons, however, has been slower. Of the 72 which were to be raised by the end of March 1937—to make a home defence total of 123—only about 26 were complete by that time, with a further 22 formed on a one-flight basis. The remainder were formed, but not yet at full strength, by the end of the year.

With the navy, which had a relatively lesser problem, the rate of construction was quickened to the extent that some of the new ships had been ready nearly half a year earlier than the scheduled time. Three of the new class of 9,000-ton cruisers are now completed and three more are expected to be ready within the next year; they have a speed of 32 knots and an armament of twelve 6-in. guns, as well as eight 4-in. anti-aircraft guns. Similar progress is being made with the building of destroyers. Two new 34,000-ton battleships were laid down in Jan. 1937, and three more have been authorized. Five large aircraft carriers are being built. And the completion of the Singapore base has been hastened, so that by the end of 1937 it was sufficiently advanced to be ready for emergency use. Early in 1936 the government decided to raise the cruiser strength from 50 to 70—the number which has for years been claimed as a necessary minimum by those directly concerned with the defence of the sea-communications: in 1914 there were 125 cruisers, new and old, available.

The situation is less comforting in regard to the deficiencies of the army. The belated official acceptance of modernization and mechanization caught its munition plants in a state of inade-



AIRCRAFT CARRIER "Furious" of the British Navy and a reconnaissance aeroplane during coast-defence practice manoeuvres

quacy for large-scale production, and a shortage of skilled labour aggravated the difficulty. While the motorization of its transport has made good progress, and light tanks have been coming through in rising numbers, only a trickle of the new anti-tank guns, light machine-guns, and anti-aircraft guns appeared in 1937. But production has been accelerated by the more vigorous impetus recently given to the war office machine since Mr. Hore-Belisha became secretary of State for war. (See also MUNITIONS OF WAR; WARFARE; WORLD ARMAMENTS.) (B. H. L. H.)

**Recession of 1937:** see FEDERAL RESERVE SYSTEM; LABOUR; RETAIL SALES; STOCKS; UNITED STATES: *Recession*, 1937.

**Reciprocal Trade Agreements:** see TRADE AGREEMENTS.

**Reclamation.** In the United States the meaning of the term "reclamation" has been restricted by usage so that its principal application now is to the reclamation of desert lands by irrigation. The United States Bureau of Reclamation, for example, deals solely with irrigation, and all of its work is in the arid and semi-arid western one-third of the nation.

In 1937 the total amount of land irrigated in the arid and semi-arid region, which encompasses within the United States about 700,000,000ac., was almost 20,000,000ac., of which about 3,000,000ac. were supplied with water by Federal projects. It is estimated that approximately two-thirds of all the lands which can



be watered with the limited supply available in the West is now developed.

The arid and semi-arid region receives rainfall averaging from 3 to 20 inches annually, insufficient generally to support tilled crops. When the gold rush to California in 1849 started the great westward migration into this area it was quickly realized that general agriculture there must depend upon irrigation. Mormon settlements in Utah a few years earlier had demonstrated the feasibility of irrigation, and the Spanish missions in California provided additional models.

At the outset, individual settlers built rude weirs and rudimentary canals to divert from unregulated streams for the irrigation of a single crop or a single farm. Soon, however, clusters of settlers were combining their efforts to provide small canal systems and more protection against the vagaries of the intermittent streams with which they had to cope. It was but a short step to co-operative effort on a broader scale. Irrigation districts and similar quasi-public bodies were formed to provide water for larger areas of land, and large stock companies and syndicates were organized to engage in the construction of irrigation works and the development of favourably situated tracts.

About 50 years ago, when it became apparent that regulation of the flow of the streams would be necessary in nearly all instances where large irrigation projects had evolved, and when it became apparent that the cost and size of the structures required to provide the needed storage would make them unattractive as private investments, Federal participation in irrigation development began to be agitated. In 1902 the Congress adopted the Federal Reclamation Act, and since that time the Bureau of Reclamation of the Department of the Interior has been the principal agency engaged in this type of improvement. Under the Reclamation law, the cost of the irrigation works must be repaid without interest in 40 years by the water users.

In 1937 the Bureau of Reclamation had under way its largest construction program, including some 21 dams, ranging in size from the great Grand Coulee dam on the Columbia river to comparatively small earthen dams on such rivers as the Pecos in New Mexico and the Little Truckee in California. Except for a few small projects in Montana which were being constructed by the State with Federal loans, all of the construction designed to irrigate new lands in the West was being done by the Bureau of Reclamation.

Prior to 1937 the bureau had built 138 storage and diversion dams and had provided homes for approximately 900,000 persons living on farms and in towns and cities established on the Federal projects.

The construction program under way in 1938 will eventually result in the irrigation of 2,500,000 acres of land now dry and unproductive, 1,200,000 acres of which are in the Columbia basin area to be served by Grand Coulee dam. Two tracts of public lands to which canals had been completed were opened for homestead entry during the year. One of these involved 106 farm units on the new Owyhee project in Oregon, and the other, 69 farm units in the Tule lake area of the Klamath project in northern California. The farm units were in great demand. When the Tule lake farms were offered publicly, more than 3,200 prospective settlers made efforts to obtain one of the 69 tracts.

Because of the control which irrigation gives in the application of water to growing crops, and because generally the growing season in the irrigation areas is comparatively long, the gross income per acre of farmers on these projects averages approximately two and one-half times the gross income per acre of the farmers the nation over. Surveys completed in 1937 show that an average gross crop value of \$47.10 was received by the farmers for each of the 2,901,919 acres irrigated by Bureau of Reclama-

tion project works in 1936.

(J. C. PA.)

**Great Britain.**—During recent years the increased capacity and effectiveness of dredgers and other power machinery has made possible some reclamations from the sea which without such aids would have been impractical and in some cases impossible. By the use of centrifugal pumps, water in which sand, and even much coarser material, is suspended, can be forced through large pipes to a considerable distance with a great saving of time and of labour costs. Land so reclaimed may be used for the creation of docks and harbours, for industrial sites, or for agriculture. Modern drainage systems and the obverse, irrigation, have also made available marsh and waste lands in many parts of the world.

In Great Britain, one of the most important reclamation works, the Southampton Docks Extension scheme has resulted in the construction of a quay wall, nearly 1½ mi. long, alongside which eight big ships of the line can be berthed. Beyond the quay wall is the new King George V graving dock, in which the largest vessel can be dry docked. The site, of an area of 408ac., was reclaimed from a tidal bay of the river Test. Before reclamation by dredging, the bay was a mudland, covered at high tide and bare at low tide. The overlaying bed of soft clayey mud, from 8ft. to 15ft. thick, was taken out to sea; a stratum of gravel, below the mud, from 2ft. to 7ft. thick, was used for making banks and for concrete; the sand and sandy clays, below the gravel, were pumped from barges through pipe lines to the area reclaimed after that area had been divided into basins protected from tidal action.

The approach channel is about 2mi. long and 600ft. wide, with turning basins at each end of the quay wall, its depth is 35ft. below L.W.O.S.T., but alongside the quay wall the berths are 40 to 45ft. below low water level. In the dredging of this channel 20,000,000 tons of material were removed. The whole scheme makes provision for an additional dry dock and for a jetty parallel to the near quay which will berth 12 liners. The reclaimed land is being used for docks accessories and for new factories and depots.

**The Netherlands.**—Although in the great work of reclamation of the Zuyder Zee, the north-western section (the Wieringer Meer polder) has already been converted into fertile land, with roads, bridges, canals, and villages, the work on the other sections has been held up for financial reasons.

It has now been decided to reclaim the north-eastern polder of what is now the Ysselmeer. The dyking and drainage of the polder is estimated to take about five years, and another five years will be required for the completion of the work. The surface of the land reclaimed will be 119,000ac. and the total cost of draining will be about £18,000,000.

**Germany.**—For a very long period the west coast of Schleswig-Holstein has been subsiding, and large areas of arable land have been lost. A 10-year plan for the reclamation of a part of this lost area is now in operation; this plan includes a total area of about 1,250,000ac. half of which is fertile marsh land, above mean water level, which only requires drainage and protection from storm; the greater part of the remainder consists of silt and sand between high- and low-water levels. These submerged portions are divided into large areas which are enclosed by stone-pitched dams, smaller enclosures are formed within these protected areas, and the silt, which has been deposited in a system of drains, is collected between tides and shovelled on to the land, making it fertile.

**Greece.**—The Salonika Plain, some 500 sq.mi. in area, was at one time a part of the Gulf of Salonika; in the course of centuries, the plain has been nearly filled by the alluvial deposits of rivers, leaving a shallow lake, known as Lake Genista, which in recent years had become an almost impenetrable mass of reeds. The



work of reclamation included the diversion of the river Axios and the systematic draining of the plain. By the diversion of the river, the Athens-Salonika railway has been protected and the delta of the river prevented from extending into the sea so far as to cut off the port of Salonika. About 108,000ac. of land has been drained and a further 198,000ac. been protected from floods. At Lake Copias, also in Greece, the reclamation by drainage of 60,000ac. has, among other benefits, brought a very considerable area of land into cultivation.

**Far East.**—A very notable work of reclamation has been the new Singapore civil airport, which was opened in June 1937, on a site reclaimed from a tidal swamp near the city. This swamp was covered with six feet of water at high tide, and at low tide there were extensive flats of soft mud which reached a depth of about 50 feet. The whole area was bunded off in blocks, varying from 10 to 25ac. in extent. After the blocks had been pumped dry, they were filled with layers of material from the hills, each layer being consolidated by the use of roller-tractors before the next layer was laid. In this way a very stable basis was obtained well above the tide level; the aerodrome portion was afterwards covered with fertile soil on which grass was planted. Slipways and an approach from the sea provide for seaplanes and flying boats.

(J. EU.)

**Recovery:** see BUSINESS CYCLES.

**Recruiting:** see REARMAMENT.

**Red Cross,** the internationally recognized symbol of agencies in various countries for the relief of sufferers in war and in civil calamities (in Islamic countries replaced by the Red Crescent). Particularly it is the device of the International Red Cross, formed in Geneva in 1864 to organize aid to the sick and wounded in time of war, and the League of Red Cross Societies, with headquarters in Paris, which undertakes welfare work in peace time. National Red Cross Societies in most civilized countries are affiliated to these organizations.

In the United States, the American National Red Cross administered extensive relief operations in connection with the Mississippi valley floods of the spring of 1937, giving assistance to over a million persons. In the year 1936–37 a total expenditure of \$25,985,000 was incurred by the American Red Cross in home and foreign relief work, and the society's national revenue amounted to \$29,167,000 besides the revenues of its 3,700 local chapters.

The British Red Cross Society is taking a prominent part in the campaign against rheumatism in Great Britain, and in 1936 at its clinics, 154,378 anti-rheumatic treatments were given, the provisional figure for 1937 being 145,592; 30,000 accident cases were dealt with during the year 1936–37, and on the day of the King's coronation, in May 1937, 944 officers and members on duty in London streets dealt with 1,428 casualties. Since 1935, the B.R.C., in common with the Order of St. John and the St. Andrew's Ambulance Association, have been training themselves and the public in the medical and anti-gas services that would be necessary in the event of air raids; they are now co-operating with the local authorities in the Air Raid Precautions Services, and up to the end of 1937 had passed 27,847 persons through their anti-gas training classes.

The International Red Cross Commission announced in Jan. 1937 that 35 national societies had contributed £23,000 to the relief of suffering in connection with the Spanish Civil War, three-quarters of that sum having been received from South America; delegations were at work in various parts of Spain, concerned mainly with revictualling and the care of the child population.

**Red River:** see MISSISSIPPI RIVER SYSTEM.

**Referendum.** The number of measures referred to United States voters in 1937, while fewer than in 1936 because fewer States held elections, was, nevertheless, considerable. In three southern States the liquor question was again referred; 24 of the 67 Alabama counties voting on March 10 to adopt the "Beverage Control Act" and the others rejecting it (total vote, 98,051 for; 100,474 against). In Georgia the attempt to legalize liquor traffic was frustrated (103,097 to 94,575) although on the same day, June 8, no less than 26 amendments of the State constitution were adopted. An advisory referendum on September 23 in Tennessee yielded 103,276 to 36,839 against repeal of the Prohibition law. A similar proposal was defeated in Verona, N.J. by one vote. New Hampshire electors, at the March town meetings, voted (20,064 to 19,852) to call a constitutional convention, following those of New York, in 1936, who, in 1937, adopted five out of six proposed amendments of the constitution, *inter alia* doubling the terms of governor and lt. governor (842,980 to 503,696) and assemblymen (856,818 to 463,074) and authorizing waiver of jury in non-capital cases (721,540 to 550,297). Texas voters also ratified five of six proposed constitutional amendments while those of Kentucky rejected all such proposals and Pennsylvanians all but one (authorizing old age pensions).

Nineteen Indian tribes voted (for the most part favourably) on tribal constitutions and 28 on charters, at various dates. On May 1, women of the Philippines (by special authorization, and for the first time in the Far East) voted themselves the franchise by a majority of about 10 to 1.

Outside United States territory, the first to use the Referendum in 1937 was Australia, on March 6. Under the Commonwealth Constitution's peculiar requirement that every amendment thereof must receive a majority in each State, as well as of the entire electorate, two proposals were defeated, although the second (authorizing the Commonwealth Parliament to regulate aviation) received a majority of the total vote. The new Irish Constitution was adopted on July 1 (686,042 to 528,296)—the first instance of such a referendum in the British Isles. The Swiss voters on November 28 rejected a proposed constitutional amendment (sponsored by Fascists) excluding secret societies from exercising the right of free association (514,984 to 233,869). Bulgarians voted on the question of allowing goats to be kept. Brazil's new constitution, though dictated and proclaimed, provides for "a national plebiscite" on future changes in case the chamber of deputies and the president fail to agree. (C. S. L.)

**Reforestation:** see FORESTRY AND REFORESTATION.

**Reformed Church:** see PRESBYTERIAN CHURCH.

**Refugees.** The 17th (1936) League assembly appointed Judge Michael Hansson, as president of the governing body of the Nansen office until Dec. 31, 1938, with the task of submitting a scheme for the liquidation of that office (as decided by the 16th assembly under Soviet pressure) by that date and for the allocation of its tasks after liquidation. This report was submitted to the 18th Assembly. During the year the office continued its work of settling Armenian refugees in Syria and Greece and refugees from the Saar in Paraguay.

The High Commissioner for Refugees (Jewish and other) from Germany (Major-General Sir Neil Malcolm) was instructed by the 17th Assembly to prepare for the winding-up of the work of the High Commission by the end of 1938. A draft international convention on the status of refugees coming from Germany was drawn up and submitted to governments in March 1937. This combined the stipulations of the Provisional Agree-



ment, between governments of July 1936, regarding such refugees, with the provisions of the Convention on the International Status of Refugees opened for signature in Oct. 1933, which was designed to cover those refugees who fell within the sphere of the Nansen office. The 18th Assembly instructed the High Commissioner to summon an inter-governmental conference early in 1938 for the adoption of a convention on refugees (and, if possible, stateless persons) coming from Germany.

The assembly considered the future of the work on behalf of the refugees, and confirmed its previous decision regarding the liquidation of the Nansen office and the High Commission at the end of 1938. It recognized, however, the League's moral duty towards the refugees, and decided that the whole problem arising out of these decisions should be re-examined, and asked the council to prepare a scheme of international assistance to refugees before the 1938 Assembly. (See also LEAGUE OF NATIONS.) (S. A. HE.)

## Regency Act.

On the accession of King George VI to the British throne in Dec. 1936, it became necessary to take steps to provide for a regency during the possible minority of the heir-presumptive. Advantage was taken of this fact to make good a slight defect that had become apparent during the illness of George V in 1928, viz., that there was no permanent provision for the carrying on of the royal function during the sovereign's sudden incapacity or absence abroad.

The terms of the bill, which received the royal assent on March 19, 1937, and to which the Dominions had agreed, provided, therefore, that in the event of the demise of the crown during the minority (i.e. under 18 years) of the heir-apparent or presumptive, and during any period when the sovereign was declared to be incapacitated by infirmity of body or of mind, the next adult heir should be regent, and should perform all the state duties and functions of the sovereign, the domestic guardianship of an infant sovereign being reserved to his or her mother, if living. It also provided that the sovereign (or regent), in the event of illness or of absence from the United Kingdom, should delegate certain of the royal functions to counsellors of state, these to be the wife or husband of the sovereign and the four adults next in line of succession. (L. H. D.)

## Relay Racing: see TRACK AND FIELD SPORTS.

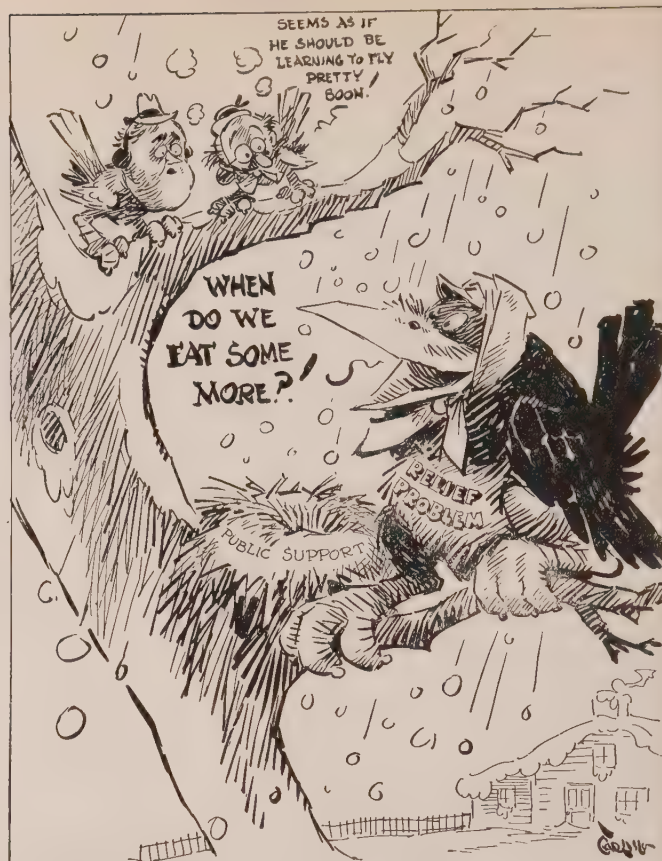
## Relief.

The needs of the unemployed during 1937 continued to dominate the practice of relief in English-speaking countries as well as in the other industrialized nations of the world. In general, provision for the care of the unemployed is made by three methods: social insurance, public works or relief works, and home relief.

Great Britain employs social insurance; the United States, State by State, is beginning to do so; Canada, as yet, does not.

The British scheme, which has been in operation since 1911, covers most of the wage-earning population, including agricultural labourers, the latter group having been added to the classes of beneficiaries in 1936. In the United States, with the exception of Wisconsin, unemployment benefits had not begun to be paid but the collection of premiums was in its second year, and employers in the covered industries had paid 2% of their wage expenditures into the Federal Treasury. Coverage in the United States, however, is only about 45% of gainfully employed workers, due to the many exemptions provided in the Federal law.

Public work and work relief continued to be relied upon in large measure for the care of the unemployed during 1937 throughout the English-speaking world. Although England has formally renounced the method, yet her extensive public improvement schemes, such as housing, are based largely on the need for



"WHO WANTS TO LEARN TO FLY?" A perennial fledgling that won't leave the nest, as seen by Carlisle in *The New York Herald-Tribune*

jobs. The Works Progress Administration was the outstanding agency caring for the unemployed in the United States. During the year considerable public sentiment developed against it, and appropriations for it were reduced, but by December the Government added 350,000 to its rolls in accordance with its announced plans at the time of the spring reductions. Somewhat over 2,000,000 workers had been employed on WPA projects in January but this number had shrunk to 1,400,000 by September. At no time were all able-bodied dependent unemployed taken care of by work furnished by the Works Progress Administration. Special projects conducted by the Public Works Administration (a separate authority headed by the Secretary of the Interior) lend themselves less easily to tabulation, but they were, in general, of less immediate effect in coping with unemployment and less money was available than for relief work under WPA. It should, however, be added that many competent authorities consider economically and socially real public works a sounder approach to the problem of the unemployed, than work relief as promoted by the Works Progress Administration.

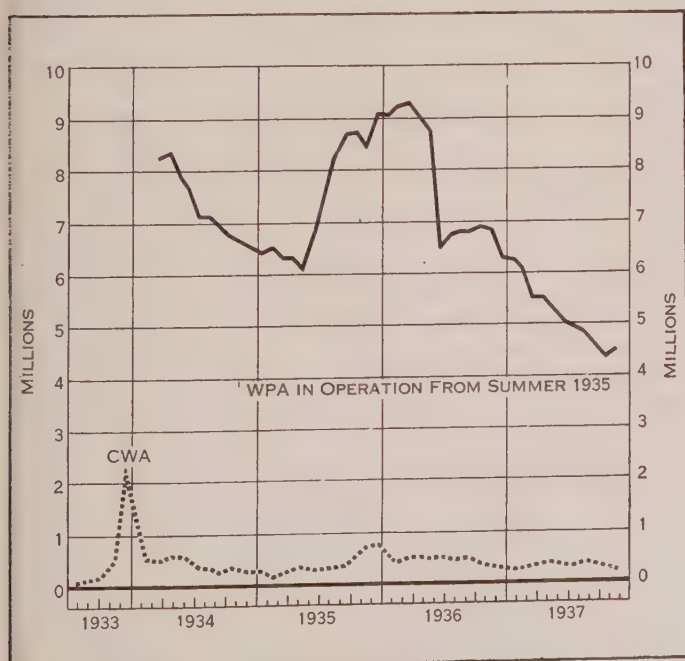
Training for the unemployed is given in vocational education centres in Great Britain, and in 1937 the Central Government recognized supplementary training and recreation projects, which had been carried on in over a thousand communities under voluntary auspices, by passing the "Physical Training and Recreation Act" which absorbs them into a new governmental unit with a budget of \$10,000,000. Nothing of the sort exists in the United States except the Civilian Conservation Corps Administration, which in September had nearly 200,000 boys in its camps. In both Canada and the United States sporadic efforts at training, vocational placement and recreation are undertaken under both public and private auspices, but the Dominion of Canada in 1937 made \$1,000,000 available to the provinces on a matching basis for a youth training plan.



## RELIGION

Direct relief to the unemployed has everywhere been separated from general relief, except in the United States, where after 1935 the Federal Government turned back this responsibility to the States. In England, on April 1, relief of the able-bodied unemployed was assumed by the new Unemployment Assistance Authority of Central Government, while general relief continued to be administered as it had been for over three centuries in all English-speaking countries by local units of government. In Canada, no change has taken place in the plan of Dominion subsidies to provincial Governments for relief of the unemployed to be used either for work relief or direct assistance. In the United States, the withdrawal of the Federal Government has in most States resulted in consigning the unemployed to the care of local Governments, most of which cannot or will not assume the responsibility, and consequently in many areas a family containing an able-bodied worker cannot get relief. A Bureau of Governmental Research in one mid-west city, after an independent investigation of a sample of the able-bodied unemployed from whom relief had been withdrawn, reported that the majority of these men were "entirely without means and few of them can expect to find employment in the labour market." A few States have assumed financial responsibility in whole or in part for the care of this group of dependents.

A significant development in the United States, though one long in effect in other countries, is what has come to be called "categorical relief"; that is assistance provided by law for certain defined groups, such as the aged, the blind, dependent children, etc. The Federal Social Security Act effective in 1936 makes provision for Federal aid to States and territorial divisions whose plans for such assistance have been approved by the Social Security Board, although it avoids the field of general public assistance. Up to Oct. 1937, 50 of the 51 jurisdictions had qualified for at least one of these provisions (Virginia alone having been accepted for none). Care of persons in these categories had been assumed by a number of States, although for the most part ineffectively for at least two decades, so the theory was not new, but the scale of application has been greatly broadened through Federal participation. During September nearly 1,250,000 persons were receiving assistance under these provisions to the amount of nearly \$34,000,000 per month.



UNITED STATES EMPLOYMENT SERVICE: applications in active file (—) and placements made (....)



TWO CONTEMPLATIVE EXPRESSIONS of Harry Lloyd Hopkins, head of Government relief activities, who believes the U. S. will have some 4,000,000 unemployed even in prosperous times

England cares for these groups through contributory social insurance, except that direct pensions are given on evidence of need in the case of aged persons who were too old at the inception of the plan to build up their own reserve or who were excluded from its benefits. Canada provides a non-contributory old-age pension on evidence of need, and some of its provinces have established permissive non-contributory aid to dependent children in their own homes.

Before the end of 1937, 30 of the 51 jurisdictions in the United States had set up new or reorganized their existing departments of public welfare to meet the requirements of the Social Security Act that the State either itself administer the program or assume supervision of local administration. A trend is developing toward centralization of both administrative and supervisory responsibility in State Departments of Public Welfare, which will probably result in greater efficiency and humanity in local care of the dependents.

During the past several years, private resources for relief have gradually decreased, either through lack of contributions or because of adoption by voluntary agencies of the principle that relief-giving is primarily a function of government. It has become generally recognized that the need for relief in the years since 1929 is far too great for private benevolence to meet. Private agencies have therefore been turning their attention to other fields of activity, such as child and family welfare, mental and social hygiene, recreation and vocational guidance. This gradual trend is true in all three countries under consideration. However, in the United States contributions to the community chests reporting to their national association increased 6% in 1937 over the previous year, or to a total of over \$83,000,000. (See also UNITED STATES: *Social Security and Relief*.)

(F. J. B.)

**Religion.** We may perhaps define religion as a conviction of the real existence of an unseen spiritual world, of which it is our privilege to be citizens, and which makes many demands upon us in the sphere of conduct. The religious man holds that the realm of values is as real as the realm of facts. He usually believes that the ultimate values are a revelation of the mind of a personal God, who is worshipped as the creator and sustainer of the universe.



It is often said that this instinct or conviction, which has been of immense importance through the whole of human history, is gradually losing its power over belief and conduct. In support of this, observers point to the decline in attendance at public worship, to the impotence of the churches to influence politics, to the agnostic tone of popular literature, and to the active anti-religious propaganda of revolutionary Governments. Persecution of a violent type, involving thousands of what in other ages would have been called martyrdoms, rages in Russia, Spain, Mexico, and in a much milder form even in Germany.

Since this "anti-God" agitation is just now prominent in the mind of the public, a few words on the subject may be appropriate. The conditions are not the same in the various parts of the world where it is active.

In Russia the Byzantine form of Caesaro-papism had made the church the subordinate ally of the monarchy. The majority of the parish priests were almost as ignorant and superstitious as their flocks. But there was and is a great deal of genuine mystical piety in the Russian people, and there is not much evidence of popular hatred of Christianity. The wish to destroy religion came from the doctrinaire Communists. Not only is the "dialectical materialism" of Marx incompatible with any form of religion, but no Christian could accept the exclusively economic interpretation of history, or share the fury which drives men to destroy every vestige of the old social order. The revolt was not directed against the abuses of the Orthodox Church. "The less corrupt a religion is," said Lenin, "the more necessary it is to destroy it."

Impartial observers do not think that this persecution will last much longer. Doctrinaire Communism has had its day, and the Soviet Government is approaching the Fascist type. The natural policy of such a Government is to make some sort of concordat with the church, as in Italy, gaining the support of the church in return for some measure of protection. Those who are making a revolution may hate religion; those who have made one are not likely to attack an institution which usually supports law and order. Nearly all the peasants have kept their icons, and it would be a great mistake to suppose that the Russian Church has been crushed beyond hope of recovery. Among the refugees there are theologians of world-wide repute, like Berdyaeff.

In Spain the conditions are too chaotic for any confident prophecy. The atrocities against the church have been terrible, but they are probably the work of turbulent gangs rather than of the Republican Government. Hatred of the church is intense among the workers in the towns and in the mines; but the Basques are practising Catholics, fighting, it appears, mainly for home rule. Many Spaniards are anti-clerical without being anti-Christian. They allege that while the church was wealthy and powerful it kept a stranglehold on education, and obstructed many necessary reforms.

Mexico is a semi-barbarous country, in which the large majority of the population are pure Indians or half-breeds. The peons were badly treated, and the church of their conquerors did little to help them. The present revolution is mainly an Indian revolt, and there have even been suggestions of a reversion to paganism, which will not be permanent. The future in Mexico is very obscure.

In Germany there is no wish to abolish the Deity, but to deify the State, a form of worship quite inconsistent with Christianity. The present situation is the result of what in modern jargon is called a resentment complex, exacerbated by fear of Bolshevism. But the worship of the God-State, which is no new thing in Germany, has taken firm root, and there is probably no task so pressing on all men of goodwill as to combat a doctrine which can have no other outcome than to plunge Europe into co-operative suicide.

In France the Conservatives tend to rally round the church,

which is too weak to excite much hatred even among the Radicals. In all Roman Catholic countries a man is generally either a practising Catholic or a freethinker, but there is more independent religion in France than in Spain or Italy.

Among non-Christian nations, the Turks have submitted to the disestablishment of their faith with surprising docility. In India the remarkable toughness of a religion based on caste is proof against all disintegrating tendencies. In China and Japan the official religions are said to be losing their hold, but authentic information is scanty.

In countries like Great Britain and the United States where there has been no revolution, the first question that arises is whether the neglect of public worship is a grave symptom of decay or not. The chief reason for it is that the spread of education and the easy access to cheap books and broadcast performances have made the laity independent of the ministrations of the clergy to an entirely new degree. Parts of the liturgy—where one is used—are thought to be antiquated by the majority who do not attend church, but they still satisfy the minority who do, so that reform is difficult. The same problem prevents a revision of the formularies of belief, which in their present forms no longer satisfy educated people. Liberal Protestantism has been partially undermined by a more drastic criticism of the sources; the newer modernism is more willing to accept the necessity of a mythical element in Christianity.

It has been said that the majority of English people believe in Christ but not in God. A kindly, good-natured humanitarianism, which gladly accepts the moral teaching of the Gospels, but without any well defined standard of values, is the lay religion of English people. An age of great material abundance and widely diffused comfort is likely to be one of tepid interest in the things that are not seen. The future, so far as the present writer can guess, is not likely to see a decline in the religion of Christ, but institutional Christianity may have to pass into new forms.

It is sometimes thought that the religions of authority have a better chance of survival than what Sabatier calls the religion of the Spirit. This is too large a question to discuss here. At present the most noticeable fact is, not the thin trickle of conversions to the Church of Rome, but the surprising popularity of freak religions and revivals, most of which have their origin in the United States. The younger generation, impatient with all that their elders have taught them, seem sometimes eager to found a new religion of their own.

(W. R. I.)

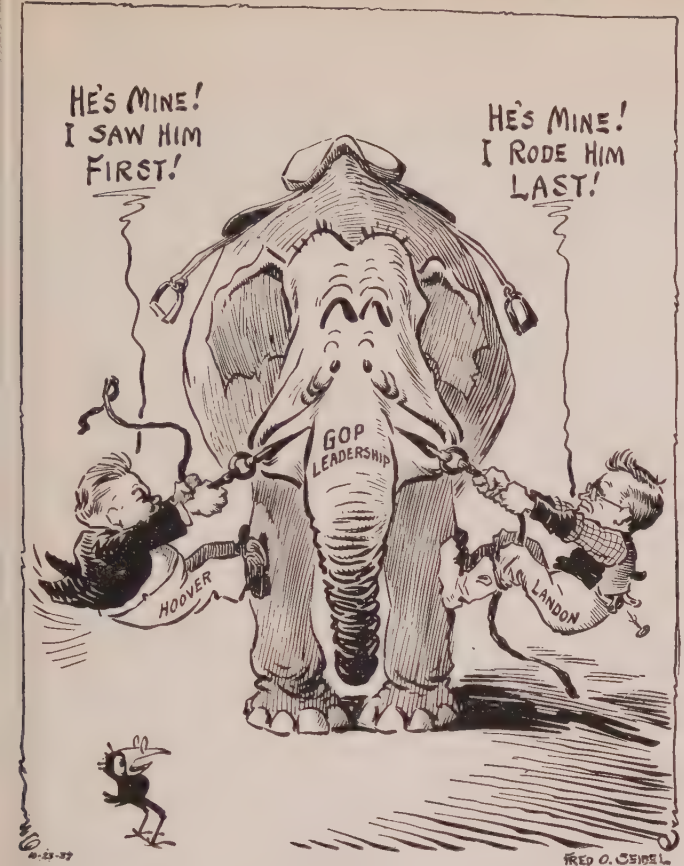
**Religious Denominations:** *see* CHURCH MEMBERSHIP.

**Republican Party.** Decisively defeated in the national elections of Nov. 1936, the Republican party entered 1937 with its representation in Congress reduced to 16 senators and 89 members of the House. Only seven States had Republican governors, and in State and local governments, the roster of Republicans holding elective office was comparatively small. The Republican task in 1937 was one of organization, rehabilitation, and the canvassing of methods by which the party, despite its meagre representation in Congress, could function as an effective opposition.

Following the Nov. 1936 elections, the National Committee reaffirmed its confidence in its chairman, John Hamilton. Mr. William R. Castle, former undersecretary of State, Mr. William Hard, and Miss Marion Martin, in charge of the women's division, were selected as Chairman Hamilton's principal assistants at national headquarters. Professor O. Glenn Saxon of Yale, was continued as Director of Research, and Leo J. Casey, a former newspaper man, was named director of publicity.

Election of Republican members to Congress in 1938 has been





"WHO'S TO DO THE DRIVING?" A problem in rival mahouts, as pictured by Seidel in *The Richmond Times-Dispatch*

the primary objective of the Republican national organization. Representative Joseph W. Martin, Jr. of Massachusetts served as chairman of the Republican congressional committee through the year, and Senator John G. Townsend, Jr. of Delaware headed the senatorial committee.

Through its research staff and the help of expert advisers, the National Committee has prepared factual studies on many current issues. These have been placed in the hands of Republicans in Congress. In the Senate, the minority leader was Senator Charles L. McNary of Oregon, and in the House, Representative Bertrand H. Snell of New York.

Among proposals advanced by Republicans in Congress during the year were those for an extension and strengthening of the present Social Security Act. Recommendations made by Republicans led to the establishment of a new advisory committee by the Social Security Board. The Republicans stressed the need for an improvement in the administration of Federal relief. House Republicans adopted a motion, embodied in a subsequent resolution, in favour of returning the actual administration of relief and work relief to the States, with the Federal Government paying 75% and the States, 25% of the total costs.

A Republican substitute was offered to the Administration's wage and hour bill, aimed to eliminate the proposed five man labour standards board, and to establish more simple standards of fixing minimum wages and maximum hours. Republicans in Congress also sought to give the Wagner Labor Relations Act a better balance by placing greater responsibilities on labour unions. When it became evident that the pending constitutional amendment to abolish child labour would fail of ratification in 1937, a Republican proposal was advanced for a new child labour amendment, avoiding the major objections registered against the old amendment. This received the unanimous support of the Senate judiciary committee. Republicans in Congress favoured

the repeal or modification of the surplus profits tax, urged the elimination of unnecessary government spending, and criticized some features of the Administration's plan for governmental reorganization, particularly the proposal to bring the semi-independent commissions under executive control and the proposal to abolish the office of comptroller general with its independent audit of executive spending. They opposed unitedly the President's proposal for enlarging the membership of the Supreme Court. On several issues, the Republicans co-operated closely with conservative Democrats.

In an effort to speed the rehabilitation of the party, Chairman Hamilton addressed many Republican meetings outside Washington and discussed organization and other problems with local leaders. Groups of Republican State chairmen, leaders of the Young Republicans, Republican chairmen of the larger cities, and the women members of the national committee, also conferred with Chairman Hamilton at Committee headquarters in Washington.

A proposal of former President Hoover to hold a mid-term Republican convention in 1938 caused much discussion. Meeting in Chicago in November, the Republican National Committee, sidetracking the proposal for a mid-term convention, authorized its executive committee to name a Committee on Program which should report back later its recommendations to the full National Committee. In December, the executive committee met in St. Louis, and set up such a committee with a membership of several hundred men and women. Dr. Glenn Frank, former president of the University of Wisconsin, was named chairman.

In the election of Bruce Barton, in the 17th New York district in November, the Republicans gained a House seat. In other special congressional elections, two more New York districts remained Republican, with a substantial increased percentage of the total vote. The Republicans also increased their strength in the New York State Assembly, and won control of the New Jersey State legislature. Republican mayors were re-elected in Cleveland, Akron and Canton, Ohio.

On September 18, Senator Arthur Vandenberg of Michigan urged a coalition of all parties to fight the "Roosevelt-Farley-LaFollette" party. During the latter part of the year, former President Hoover made several important speeches. On December 10, in Washington for the Gridiron dinner, former Governor Alfred M. Landon issued a statement definitely removing himself as a possible Republican candidate in 1940. (See also ELECTIONS.)

(O. McK.)

**Resettlement Administration:** see HOUSING.

**Resins, Synthetic:** see CHEMISTRY, APPLIED; INDUSTRIAL RESEARCH; PAINTS AND VARNISHES; PLASTICS INDUSTRY.

**Respiration, Artificial:** see IRON LUNG.

**Retail Sales.** The sales for all types of American retail stores in 1937 are estimated by the United States Department of Commerce, to have been \$40,388,000,000, an increase of approximately 6½% over the total retail sales for the year 1936. The largest sales increases in dollar volume were shown by the three major mail-order companies, which had an average gain of about 15% for 1937 and this gain was equalled also by the shoe chains. Four of the leading grocery chains showed an increase of 9% for 1937, with the drug chains next with an average of 7.5%. The variety chains had an average gain of 4.7%.

Although the gains of the variety chains seem small when expressed in terms of per cent, their sales declined from 1929 to 1933 only 25%, as compared with a general retail decline, for the same period, of 49% in dollar volume. Consumers' co-



operative stores showed a gain of 20% in 1937 over 1936, although their total sales in dollar volume probably did not exceed \$500,000,000, or about 14% of the total 1937 volume of \$40,388,000,000.

The department, dry goods, and general merchandise stores showed a gain of 6% in sales in 1937 over 1936. Since a little better quality of merchandise was sold in 1937 than in 1936, it is probable that the total number of transactions, represented by unit sales to the consuming public, was little if any more in 1937 than it was in 1936.

The outstanding problem which confronted retailers in 1937 was the employee-relations problem. Trade unions made important gains in the retail field in 1937, and through collective bargaining obtained substantial wage increases or shortened hours for various groups of retail employees. Department store and specialty store managements granted substantial increases to their employees in other localities where they were not approached by the unions.

At the beginning of 1937, retail sales plans were predicated upon obtaining an increase of at least 10%, which most of the better-managed stores realized during the first half of the year. During the following six months, however, sales increases became progressively less. As a consequence, the average gain in sales of 6% in 1937 over 1936 has been insufficient to absorb the increase in payroll and in additional taxes, and therefore department store and specialty store profits for the year 1937 will be less than those shown for the year 1936. Department store operating expenses, moreover, increased in 1937, approximating 35% of retail sales, or an increase of about 10% of the 1936 expense rate. It is estimated that the net profit on total sales of department and specialty stores for the year 1937 will not exceed, if they reach 3½%, whereas in 1936 their average net profit on sales was 4.9% based on the figures released by the National Retail Dry Goods Association.

The decline in the sales volume during the last half of 1937 is attributed to the fact that commodity prices rose too quickly at the early part of 1937, and when the business recession began in the summer of 1937, consumers curtailed their buying power, leaving many retail stores with relatively high inventories. In turn, retailers were forced to make price cuts in order to liquidate their inventories during the latter half of 1937, and the resultant increase in markdowns during the latter part of the year will also have its influence in reducing retailers' profits for the year 1937. The application of legal price maintenance operated to some extent to increase prices of nationally advertised commodities, notably in cosmetics, drugs, and books. Price-maintained arrangements were made possible by passage of the Tydings-

Miller Act, making it legal for manufacturers to establish the retail price of their products in the 42 States where Fair-Trade Laws were already in effect. (P. J. R.)

**Great Britain.**—Retail sales of food in Great Britain continued to expand during 1937, when the Bank of England index number of food sales (1933=100) reached a figure of 131, as compared with 120 in 1936 and 111 in 1935. But to an increasing extent this expansion was being accounted for by rising food prices; so that the increase in volume was narrowing, as is shown by the following table, in which comparison is made with the Ministry of Labour Cost of Living Index (food only):

(Food)	Money sales Per cent	Retail prices Per cent
1936. . . . .	+9	+4
1937. . . . .	+9	+7

In the case of other merchandise, the expansion of retail sales continued to be somewhat smaller than for foodstuffs, the corresponding index number being 119 for 1937, 113 for 1936, and 108 for 1935.

A distinction must here be drawn between sales of clothing and of household equipment (furnishings, hardware, etc.). During the period of economic recovery, from 1932 to 1936, sales of household goods expanded appreciably faster than clothing, retail prices in each case being fairly stationary. In 1937, however, this position was reversed, and the increase in clothing sales began to outstrip that of household equipment. At the same time, retail prices of non-food articles began to rise appreciably for the first time since 1930; and this rise affected household goods considerably more than clothing.

In the following table, comparisons are made between 1937 increases in money sales and retail prices, the latter being approximate estimates only:

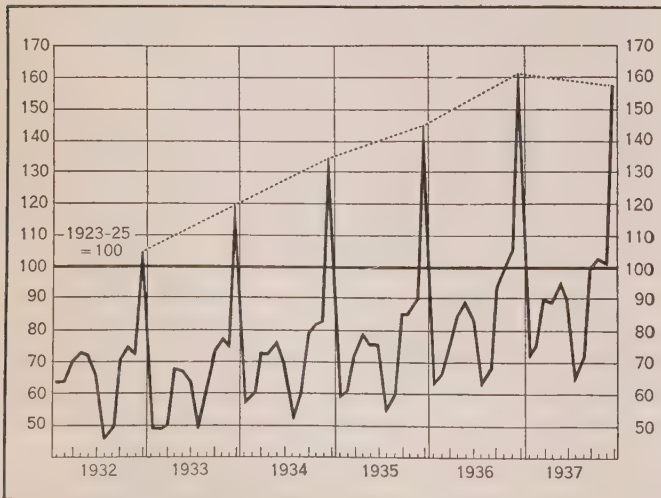
(1937)	Money sales Per cent	Retail prices Per cent
Clothing:		
Women's wear . . . .	+6.1	+ 2.8
Men's & boys' wear . .	+5.9	+ 3.2
Boots & shoes . . . .	+8.4	+ 5.9
Dress piece goods . . .	+1.8	+ 2.7
House equipment:		
Furnishings . . . . .	+3.1	+10.0
Hardware . . . . .	+1.6	+ 8.6
Piece-goods . . . . .	+2.8	+12.2

Thus the volume of clothing sales continued to expand, whereas sales of household goods declined appreciably.

In the autumn of 1937, a recession developed in the sections of retail trade catering for consumers with higher incomes, but not correspondingly among those supplying work-class consumers; as a consequence, retail sales in Central and West End London (relatively high-class) rose during 1937 by only 2%, as compared with over 7% for Great Britain as a whole. The cause of this recession is thought to be closely linked to the decline in stock exchange values which occurred at the same time. (D. BA.)

**Réunion**, an island c. 420mi. east of Madagascar, is a French colony. Area 970 sq.mi.; population 209,000. The capital is St. Denis. Réunion exported, in 1937, 70,000 tons of sugar to the value of over frs. 90,000,000 and over 34,000 hectolitres of rum. Total exports, January to Oct. 1, 1937, were valued at frs. 116,000,000. A health resort has been opened at Cilaos (3,250ft.).

**Rexists:** see BELGIUM: *History*.



DEPARTMENT STORE SALES in the United States: Federal Reserve Board index, without adjustment for seasonal variation



**Rheumatism:** see ARTHRITIS.

**Rhode Island,** one of the original States of the United States, popularly known as "Little Rhody"; area, 1,548 sq.mi. (smallest of the United States); population according to the U.S. census of 1930 was 687,497 and 680,712 in the 1936 State census. Of the latter figure, 525,232 were native white, 144,952 were foreign-born white, and 10,528 were negroes and others. The urban population (U.S. census, 1930) was 635,429, or 92.4%.

**History.**—At the special session of the legislature held Dec. 1936, new acts provided that county sheriffs and clerks of courts shall be appointed by the governor, the latter with consent of the Senate. At the regular 1937 session the gasoline tax was increased from two to three cents per gallon. A special commission was created to study and report on the tax structure of the State. Acts provided strict regulation of child marriages, created a commission to study juvenile court procedure, ordered children between ages of seven and sixteen years to attend school regularly, and regulated traffic in alcoholic beverages. New motor vehicles must be equipped with safety glass. The maximum rate of interest upon small loans shall be 3% per month. An act set up a bridge commission for construction of a bridge from Saunderstown to Conanicut island across lower Narragansett bay. The most important political event of 1937 was the contest between Governor Quinn and Walter O'Hara, manager of the Narragansett race track. The climax was reached in the governor's proclamation of martial law effective in the vicinity of the race track and his order closing the track for the latter part of the racing season. The chief officers of the State were: Robert E. Quinn, governor; Raymond E. Jordan, lieutenant-governor; Louis W. Cappelli, secretary of State; John P. Hartigan, attorney-general; Henri A. Roberge, general treasurer; and Edmund W. Flynn, chief justice.

**Education.**—During 1936-37 there were in the public elementary schools 75,770 pupils and 2,407 teachers, and 45,291 pupils and 1,853 teachers in high schools.

**Banking and Finance.**—In the State there were 68 banking institutions. Resources of banks under State supervision totalled \$443,645,985.66 and of banks under Federal supervision, \$110,335,110.62. Savings deposits in savings banks and trust companies amounted to \$317,172,200.16 representing 397,225 depositors, June 30, 1937. In addition, building and loan associations, loan and investment companies, and credit unions had \$44,967,367.21 invested in them.

**Agriculture.**—In 1935 the farm population was 21,751 in contrast with 16,477 in 1930. All land in farms, 307,725 acres; value, \$35,237,660. Crop production estimate by acres and quantity, Oct. 1, 1937, by Dr. J. L. Tennant, agricultural economist, Rhode Island State college indicated: tame hay, 42,000ac., 56,000 tons; potatoes, 4,300ac., 752,000bu.; corn, 9,000ac., 378,000bu.; oats, 5,000ac., 60,000bu.; apples, 380,000bu.; pears, 10,000bu.; and peaches, 27,000 bushels.



ROBERT E. QUINN, governor of Rhode Island

**Industry and Business.**—The United States census of business for 1935 shows that there were in the State 165,024 employees receiving a payroll of \$181,309,000. Of these, manufacturers employed 112,518 with a payroll of \$120,070,000. Retail business employed 28,881 with a payroll of \$27,671,000. Wholesale employed 6,328; insurance, real estate and finance, 4,976; service, 3,210; hotels, 1,288; mines and quarries, 175; construction, 2,299; miscellaneous, 5,350. The number of manufacturing establishments was 1,429. (M. C. M.)

**Rhodesia, Northern,** a British protectorate lying between lat. 8° 15' and 18° 5' S. and long. 22° and 33° 35' E., the Zambezi forming the southern boundary. Governor, Major Sir H. W. Young. Area, 288,400 sq.mi.; pop. (1931), 1,386,081, of whom 13,846 were Europeans. Capital, Lusaka (transferred from Livingstone in 1935); Ndola is the centre of the "copper belt." A Native Authority Ordinance, extending the principles of "indirect rule," was issued in 1936.

The year 1937 was one of marked economic recovery. In May a commission was appointed by the British Government to enquire into the financial position of the territory. It was announced that a portion of the budget surplus would be devoted to the construction and maintenance of a road from Lusaka to the Otto Beit bridge now being built over the Zambezi at Chirundu, which when opened will bring the capitals of the two Rhodesias within a day's journey of each other by car. The development of the new capital, Lusaka, made considerable progress, and its importance as an airport is steadily increasing. In November it was announced that the petrol and entertainment duties were to be abolished, and a boarding school established at Lusaka.

**Trade and Communications.**—Copper is the largest export, its value in 1936 being £4,994,716. Cobalt, vanadium, and gold were also exported. There was a drop in imports owing to cessation of imports of machinery and materials for developing mines. Total imports (1936), £2,291,953; exports, £6,045,137. The railway from Southern Rhodesia to the Belgian Congo passes through the centre of Northern Rhodesia, and branch lines serve the Roan Antelope, Nkana, and Muflira copper mines. There are three main roads. Roads are generally passable during nine months, but December to April traffic is restricted to 7,000 pounds. There are six Government telephone exchanges, and private exchanges at three of the mines. Imperial Airways Service operates, and also the French Air Service between Madagascar, Broken Hill, and Elizabethville.

**Banking and Finance.**—Southern Rhodesian notes and coinage are legal tender. Revenue (1936), £863,255; expenditure, £887,417. There is a native poll-tax, and an income tax (value in 1936, £211,721). Mineral rights belong to the British South Africa Company, which still draws mining royalties. (W. M. M.)

**Rhodesia, Southern,** a self-governing British colony, extending from the Zambezi in lat. 15° 6' S. to the Limpopo in lat. 22° 14' S., and from the Bechuanaland protectorate in long. 25° 14' E. to Mozambique in long. 33° 4' E. Area, c. 150,344 square miles. Pop. (1931) 1,109,012, of whom 49,910 were Europeans. Governor, Sir Herbert Stanley, G.C.M.G.; prime minister, Dr. G. M. Huggins. Great Britain retains certain powers over native legislation. The chief towns are Bulawayo (11,879), the capital Salisbury (9,619), Umtali (2,090), and Gwelo (1,266). State education is provided for Europeans; boarding schools play a large part. Matriculation for the University of South Africa is taken. Native education is provided by missions. The Jeanes school for native teachers is at Dombashawa.

**History.**—In Oct. 1937 the functions of the high commissioner were transferred to the secretary of state, and a board of trustees



appointed to govern the native reserves. A new Income Tax Act provides for the taxation of incomes derived from outside the colony. In July a new "Union Party" was formed to work for the country's amalgamation with the Union of South Africa. Work on the Umgusa dam, near Bulawayo, was almost completed during the year; and the expenditure of £500,000 to construct a further 1,000mi. of strip roads was approved. The relations between the two Rhodesias and Nyasaland continued throughout the year to be keenly discussed, and on Nov. 23 it was announced in the British parliament that a royal commission was to be appointed to visit the three countries, and report on the desirability of closer co-operation or association between them.

**Trade, Communications, Finance, etc.**—In 1936 there were 36,099mi. of telegraph and telephone. Railways representing five companies combined in organization as Bulawayo-Rhodesian Railways, Ltd., over 2,638mi. of track. Agricultural products are tobacco, maize, and citrus. There is great variety of minerals. Chrome production is increasingly important. Exports (1936, excluding est. value of gold premium, £2,236,000), £7,917,171; imports, £7,026,688.

British and South African silver coins are in circulation. Notes are issued by the two banks, the Standard Bank of South Africa and Barclay's. Revenue receipts for 1936-37 were £3,044,000, including customs £810,000, income tax £623,000, native tax £393,000, mining revenue £395,000; est. revenue for 1937-38, £3,103,500; est. expenditure, £3,149,587.

**Defence.**—All citizens are liable for a period of military training. The British South African police are the only permanent force, but there is provision for formation of a police reserve. The Territorial Active Force forms 2 battalions of the Rhodesia regiment. There is a subsidy for training a reserve of air pilots.

See Falker Windram, *Night over Africa*, 1937. (W. M. MA.)

**Rice.** The increase in rice growing in the U.S. resulted in 1937 in a record crop of 53,004,000bu., compared to 49,002,000 bu. in 1936, U.S. Department of Agriculture estimates. The yield in 1937 was 48.5bu. to the acre from 1,093,000ac.; in 1936, 50.6bu. to the acre from 969,000 acres. Three states, Louisiana, Texas and Arkansas, produced 42,854,000bu. of the 1937 crop; California, 10,150,000 bushels. Estimates of rice production in principal rice-growing countries in 1937 are given by the International Institute of Agriculture as follows, figures in parentheses being for 1936: Japan, 598,088,000bu. (612,313,000); Burma, 384,588,000bu. (351,951,000); Chosen, 239,502,000bu. (176,111,000); Taiwan, first crop, 40,112,000bu. (43,085,000); Italy, 38,409,000bu. (35,957,000); Annam, first semester, 14,712,000bu. (20,650,000); Bulgaria, 605,000bu. (1,015,000). Complete figures are not available for the crop year in India, which produced in 1935-36 a harvest of 2,111,632,000bu., compared to an annual average of 1,933,424,000bu. in the five years ending in 1934-35. The acreage under cultivation in India the current year, however, is 64,846,000 compared to 65,125,000 in 1936. In Egypt complete estimates for the crop year are not yet available, but the acreage is much smaller, 269,000ac. as compared to 489,000 in 1936. The Egyptian crop in 1936 was 33,943,000bu., compared to an annual average of 23,277,000bu. during the preceding five years. The acreage in Yugoslavia was the same for both 1937 and 1936, when 140,000bu. were produced. (See also CEREALS.)

(S. O. R.)

**Rio de Janeiro,** capital and largest city of Brazil, on the bay of Rio de Janeiro, or Guanabara. The area is 451 sq.mi., co-terminous with the Federal District. Population (official estimate, Dec. 31, 1936), 1,756,080. It is the

fifth largest city in America. Municipal organization is controlled by the national government, through an appointed prefect, or mayor. Little of note peculiar to the city itself occurred during 1937, but the strong centralizing trend of the national government promises to bring about a considerable augmentation of population. The wide avenues and the tropical flora, the botanical gardens, and the imposing buildings, against the setting of the beautiful harbour, make the city one of the world's most impressive capitals. It has external communication by steamship and air transport service, and internal by air, railway, sea, and highway. It is the seat of the National University of Brazil, created in June 1937, as the successor to the University of Rio de Janeiro. See BRAZIL.

(L. W. BE.)

**Rio de Oro and Adrar:** see SPANISH WEST AFRICA.

**Rio Muni:** see SPANISH WEST AFRICA.

**Roads and Highways.** During the past 20 years, science has given us roads that are durable, weatherproof, dustless, and capable of carrying modern vehicles at speeds up to 100 miles per hour. Unfortunately, this achievement has been attended by a rising casualty list which shocks public opinion, and constitutes the main preoccupation of road experts. Public safety now dominates every other problem of the road. In Great Britain, road accidents occur at a rate exceeding 200,000 per annum; fatal accidents on British roads numbered 19 a day in the years 1930 and 1934, since when, fortunately, the figures have shown a slight downward tendency. It is stated that, in Germany, 8,381 persons were killed in road accidents during 1936, while the corresponding figure for France was 4,415. The toll of the road is rising in the United States of America, where it is predicted that road deaths may reach a total of 40,000 in 1938, as compared with 37,000 in 1935 and 38,500 in 1936. Some slight consolation may be found in the fact that, generally speaking, the curve of road accidents rises less steeply than that of motor-car sales.

In Great Britain, the most numerous victims are pedestrians and cyclists, who collectively account for about seven-tenths of the casualty list. A wide variety of expedients has been introduced, in the hope of stemming the tide of accidents, e.g., speed limits of 30m.p.h. on roads in built-up areas; refuges, crossings, subways or bridges for pedestrians, guard rails, white lines and cycle tracks, not to mention a multiplicity of warning signs, traffic lights, etc. A recent innovation in Great Britain was the appointment, by the minister of transport in 1937, of accident officers to examine "black spots," and stimulate local interest in safety problems.

The use of road frontages for purposes incompatible with the safety and convenience of traffic will, in future, be checked under the provisions of the Restriction of Ribbon Development Act, 1935, in England. Section 2 confers upon highway authorities the control of estate development and new buildings within 220ft. from the middle of the road. The provision of service roads can be secured, and extended powers are given for the creation of parking places, above and below ground.

The passing of the Trunk Roads Act, 1936, testifies to the growing recognition of the national importance of the British road system which hitherto has been maintained entirely by local highway authorities. Under the new act, the minister of transport became, in 1937, the highway authority for 4,500mi. of trunk roads in the United Kingdom, leaving about 174,000mi. under local control as in the past.

The following recommendations are extracted from the Memorandum on *The Lay-out and Construction of Roads*, issued by the ministry of Transport in 1937:





A GERMAN SAFETY HIGHWAY, with parkway separating traffic lanes, and two-level intersection



CONCRETE HIGHWAY being laid by motorized machinery that advances as it works

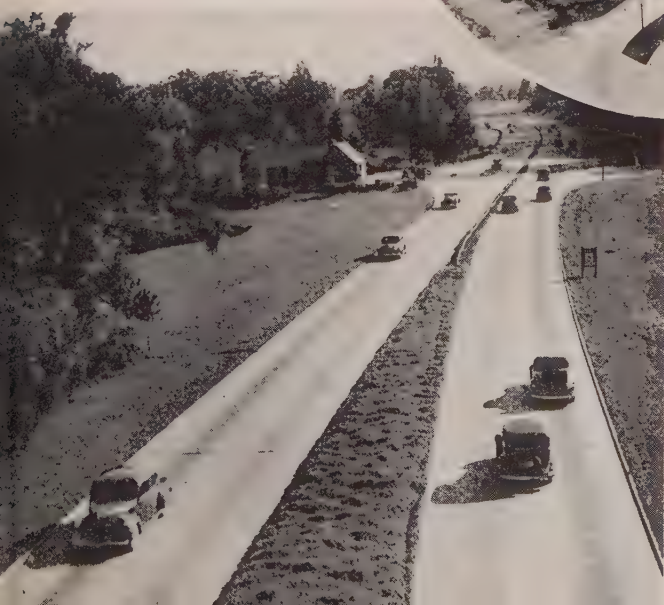


GRADE SEPARATION, the modern crossroads

CLOVER-LEAF INTERSECTIONS and underpasses safeguard and speed motorists on Chicago's Outer Drive



A CLOVER-LEAF JUNCTION on one of Germany's new State motor roads





"The unit width for each lane of vehicular traffic should normally be 10ft., and the width of the carriageway should not be less than 20ft. Where the traffic volume demands four lanes, the carriageway should be divided by central islands, or by a continuous central reserve, so as to segregate up and down traffic. Dual carriageways are justified on roads carrying 400 vehicles and upwards per hour. Shrubs planted on the central reserve will mitigate glare. Cycle tracks (6ft. wide), as well as footways, will be necessary along many busy highways. One thousand feet should normally be regarded as the minimum radius of curves, and the width of the carriageway should be increased where curves occur. Superelevation or banking should be applied, varying from 1 in 16 for curves of 500ft. radius to 1 in 40 for curves of 5,000ft. radius. A gradient of 1 in 30 is usually regarded as the maximum. In setting out vertical curves, the aim should be to enable drivers approaching a summit from opposite directions to see each other at a distance of at least 500ft."

**Traffic and Road Works.**—In spite of the dangers of the highway, there are no signs of any flagging in the popularity of motor transport. In Great Britain, every day sees 400 or 500 new automobiles come on to the road. The number of licences current in Feb. 1932 was 1,691,565, as compared with 2,378,717 in 1937—an increase of nearly 41% in five years. The traffic census taken on the 27,000 miles of Class I roads in Aug. 1935 recorded an increase of 34.47% in vehicles, in comparison with the year 1931. In Great Britain, the number of vehicles per mile of road is about 12 (omitting motor-cycles), in France about half that, and in the U.S.A. approximately eight. In the light of such figures, it is not surprising that the capacity of highway systems originally intended for horse-drawn traffic should be severely over-taxed, and that accidents should be rife. In many of the older countries, the governments accordingly are faced with the alternatives of drastically improving the existing roads or creating a new system of motorways adapted for modern traffic. In Great Britain hitherto, the policy usually favoured has been to improve the old highways and form by-passes round towns and villages. Upwards of 300 by-passes have already been formed, but the results have not won universal approval, and objectors are apt to point to the bolder methods pursued in Germany and Italy, where main roads are a national, not a local, responsibility. The German Government has embarked upon a program for the building of nearly 4,500 miles of motor-roads (Autobahnen), of which 1,240 miles were open to traffic in Dec. 1937. They are designed with dual carriageways, and traverse the country with the uncompromising directness characteristic of railway engineering. There are bridges or subways at all cross-roads, so as to eliminate the risk and delay associated with old-fashioned road junctions. In Italy, too, the building of motorways has been in progress for several years, and few roads are more familiar to tourists than the motorways radiating from Milan to the Italian lakes, from Rome to Ostia, and from Rome to Naples. The desire to attract foreign visitors has been largely instrumental in the building of mountain roads in France and Austria. During the summer of 1937, the Route des Alpes, passing over the Col de l'Iséran (9,000ft.), was opened for its entire length. At the same time the Austrian government completed the Grossglockner Hochalpen road (summit level 8,200ft.)—the project including a tunnel more than 900ft. in length.

In the United States of America, the building of new roads proceeds at the average rate of about 20,000 miles a year. During the year 1937 no fewer than 1,149 level crossings were abolished. Good progress is being made with the inter-American highway, which will extend 3,250 miles from Nuevo Laredo, on the border between Texas and Mexico, to Panama City. The gaps in the route have now been reduced to about 560 miles in the aggregate.

**Urban Congestion.**—The ever-growing congestion in populous centres, and especially in the great capital cities, is taxing the ingenuity of road-engineers and town-planners. A recent investigation in London showed that the average pace attained by an automobile, in making a 12½-mile journey across the heart of London, was roughly 12½ miles per hour. Traversing the city from east to west, the average was only 5.85 miles per hour, while on the slowest journey recorded, the pace dropped to 3.6 miles per hour. These figures compare with an average speed of 23.6 miles per hour on the North Circular road, which lies at a distance of seven miles from the centre. Site values are so high that street widenings in the heart of London may cost £2 millions or more a mile, while the value of the space occupied by a stationary motor-coach has been estimated at £40,000—an indication of the intense difficulty presented by the parking problem in such areas. The gravity of the situation is increased by the division of the responsibility for improvements among multitudinous authorities, and it was in the hope of securing a plan of comprehensive scope that the minister of transport, three years ago, ordered a highway development survey of Greater London to be prepared by Sir Charles Bressey, in consultation with Sir Edwin Lutyens. The plans were ready at the end of 1937. Meanwhile, important works in progress include the construction of a Lower Thames tunnel at Dartford, and the extension of the Cromwell road to form a new western exit from London. Londoners have much to learn from what has been done in New York, e.g. the elevated highway running the whole length of the west side of Manhattan from the Harlem river to the Varick street entrance to the Holland tunnel—a distance of 12 miles. At the Harlem river, a junction is made with the Henry Hudson parkway which, in its turn, connects with the Hutchinson river parkway of the Westchester system. Mention should also be made of the Long Island parkway system, and of the Pulaski Skyway which, avoiding the local traffic system, connects the Jersey portal of the Holland tunnel with Newark airport. On Dec. 22, 1937, the south tube of the "Lincoln" vehicular tunnel under the Hudson river was first opened to traffic.

Paris has devoted much attention to the building of vehicular subways, enabling traffic along the principal radial roads to pass under the ring road known as the Boulevard Militaire which follows the course of the dismantled fortifications. In Berlin, a scheme is under way for the extension of the well-known Unter den Linden, where, incidentally, the old lime trees have recently been replaced by new. This extension will involve the drastic widening of the Charlottenburger Chaussee through the Tiergarten. As part of the re-shaping of Rome, the new Via del' Impero claims attention by its imposing width, and the manner in which it brings to view some of the principal features of the ancient capital of the world. Stockholm displays an extremely ingenious application of the cloverleaf device as a means of solving traffic difficulties at Slussen—the most congested intersection in the city. The progress of road engineering will be reviewed at the International Roads Congress to be held at The Hague in June 1938. See also CHICAGO; GASOLINE.

(C. H. BR.)

**Robinson, Henry Mauris** (1868–1937), California banker, was frequently consulted by U.S. presidents and refused cabinet positions under Presidents Wilson, Harding and Hoover. Born in Ravenna, Ohio, Sept. 12, 1868, he practised law in Youngstown until he moved to New York in 1900. Active in the financial and business world from that time, he shifted his headquarters to California in 1906. His public services included work on the U.S. Council of Defense, the Supreme Economic Council of the Paris Conference, and the U.S. Shipping Board. He was a member of the Reparation Com-



mission in 1924, chairman of the American delegation to the International Economic Conference of 1927, and a prominent adviser of President Hoover during the financial crisis of 1929-31. In addition to his wide business connections, he served as chairman of the board of the Huntington library and art gallery and as a trustee of the California Institute of Technology. He died in Pasadena, Cal., Nov. 3, 1937.

**Robinson, Joseph Taylor** (1872-1937), American Senator and leader of the Democratic majority since 1931, died suddenly on July 14, 1937, at Washington, D.C., in the midst of a struggle over President Roosevelt's court plan. A loyal party man from his entrance into politics at the age of twenty, he served as member of the House of Representatives (1902-1913), as Governor of Arkansas (1913), and as U.S. Senator (1913-1937). A leading candidate for the Supreme Court at the time of his death, he was born at Lonoke, Ark., Aug. 29, 1872 and practised law before entering upon his political career.

**Robinson-Patman Act:** see CHAIN STORES; MARKETING.

**Rockefeller, John Davison** (1839-1937), American capitalist who at the height of his business career was the richest man in the world, was a pioneer in oil exploitation, business organization, and finance—amassing a fortune supposed to be in the neighbourhood of \$1,000,000,000. His contributions for educational, medical, and religious purposes alone amounted to \$530,853,632. Born in Richmond, N.Y., July 8, 1839, he went to high school and business school before starting business as a clerk. In 1862 he invested in an oil refinery, which he ultimately built into the great Standard Oil Company. Upon his retirement from business, Rockefeller turned his fortune over to his son for administration. The unpopularity of his business methods was, in view of the size and usefulness of his benefactions, gradually diminished, and at the time of his death he was remembered more for his philanthropies than for his business tactics. Foremost of the "rugged individualists" who flourished in the United States in the 19th century, he died in his sleep at Ormond Beach, Fla., May 23, 1937. Articles on his life and benefactions may be found in the *Encyclopædia Britannica*, vol. 19, pp. 364, 365.

**Rockefeller Center**, including Radio City, covers nearly three blocks, 48th to 51st st., between 4th and 6th avenues, New York, an area of approximately 12 acres. Early in the 19th century, Dr. David Hosack acquired 20 acres of common land, including this area, where he established a botanic garden which the State legislature in 1814 granted to Columbia college. With a view to erecting a new opera house, John D. Rockefeller executed a long lease on the property, and when the scheme fell through, he substituted the largest building enterprise ever undertaken by private capital. Eleven of the 14 projected buildings have been completed. Radio City, the headquarters of the Radio Corporation of America, embraces the N.Y.C.A. building, 850 feet in height and in gross area the most spacious office building in the world. Also, there are the elaborately equipped and decorated Radio City Music Hall seating 6,200 persons and the Center Theatre, seating 3,700, and containing the world's largest chandelier, 25 feet in diameter with 400 lights and weighing 6 tons. Fronting Fifth avenue are the International building and buildings named after Great Britain, France and Italy. The approaches to these vast structures are beautified by sculpture and fountains. The interiors are adorned by murals which express modern tendencies in art. There is accommodation

for stores and exhibitions, also lavishly appointed restaurants and cafés, and every up-to-date convenience. About 20,000 persons earn their livelihood in the buildings which are visited daily by a further 80,000 persons, many of whom, visiting New York, regard Rockefeller Center as a showplace, and one of the wonders of the world, which undoubtedly it is.

**Rockefeller Foundation** was chartered in 1913 for the permanent purpose of "promoting the well-being of mankind throughout the world." Its present program is concerned with certain definite problems in medical, natural, and social sciences, the humanities, and public health. In the field of medicine its interest is centred in nervous and mental diseases, and its contributions are chiefly for the furtherance of research and teaching in psychiatry and allied subjects. Its program in the natural sciences is concerned with experimental biology. In the social sciences it has three spheres of special interest: international relations, social security, and public administration. The program in the humanities centres around the techniques by which cultural levels of contemporary society are being influenced—such as museums, the radio, drama, and libraries—and the promotion of better international understanding through cultural interchanges. The program in public health includes research on a number of selected diseases; demonstrations in the control of some of these diseases in their environments; co-operation with Governments in services of central or local health departments; and the development of public health education. During 1937 the foundation appropriated approximately \$9,850,000 for work in its various fields of interest. The chairman of the board of trustees is John D. Rockefeller, Jr.; the president, Raymond B. Fosdick; and the secretary, Norma S. Thompson.

**General Education Board** was incorporated by an act of Congress in 1903, with the stated object of "promoting education within the United States of America without distinction of race, sex, or creed." Its present program is restricted in the main to giving assistance to research and experimentation for the improvement of general education, with special reference to education, both white and negro, in the Southern States. During 1937, the board appropriated approximately \$5,000,000 for purposes within its present program and to bring to a close certain other undertakings under previous programs. The chairman of the board of trustees is John D. Rockefeller, Jr.; the president, Raymond B. Fosdick; and the secretary, William W. Brierley.

**The Spelman Fund of New York**, during 1937, continued its program directed at the improvement of the methods and techniques in the field of public administration. Support was extended to public and quasi-public agencies engaged in circulating information regarding advances in administrative practice, in developing new types of organization and operating methods, and in actually installing administrative improvements in governmental agencies.

**Roebbling Medal Award:** see MINERALOGY.

**Roman Catholic Church.** Claiming to be the one, only church established by Jesus Christ, the Catholic Church professes to possess the four "marks," or characteristics whereby the church of Christ may be recognized by men. These characteristics require that the church be: one in doctrine, worship and government; holy in its teaching and its members; catholic in the sense of being universal; and apostolic in the succession of its hierarchy. In order to perpetuate in all their integrity the truths and means of salvation taught by Christ, it is necessary that there exist a visible, or human organization



under the supreme authority of the bishop of Rome, the successor to St. Peter whom Christ designated as His vicar on earth.

The unity, holiness and apostolicity of the Catholic Church have been spread universally through the world. There are at present a total in excess of 375,000,000 Catholics. These include members of the Latin, Greek and other Oriental rites in communion with, and under the jurisdiction of, the pope or bishop of Rome. The number of Greek or Oriental Roman Catholics is approximately 7,758,300. The Catholic population on the European continent is estimated at 210,000,000. That of England and Wales is about 2,400,000, of Scotland about 600,000; of all Ireland about 3,000,000. In the two Americas, the Catholic Church includes a membership of 136,000,000. Of these, there are in the United States, including Alaska and Hawaii, 20,959,134; in the Dominion of Canada, 4,415,000.

**New Cardinals.**—This vast body of the Faithful is united under the spiritual headship of the Roman pontiff (*see* Pius XI) who exercises temporal sovereignty over Vatican City State. The College of Cardinals, titular pastors of churches in Rome, was brought up to one less than the traditional and canonical number of 70, when, on Dec. 13, at the Secret Consistory, Pope Pius created five cardinals; Arthur Hinsley, archbishop of Westminster, England; Pierre Gerlier, archbishop of Lyons, France; Giuseppe Pizzardo, secretary for Extraordinary Ecclesiastical Affairs; Ermenegilde Pellegrinetti, apostolic nuncio to Yugoslavia; Adeodato Giovanni Piazza, patriarch of Venice, Italy. The composition of the Sacred College is (Jan. 1, 1938) 39 Italian and 30 non-Italian members. Death came to two members during 1937: Cardinal Ilundain y Esteban, archbishop of Seville, Spain, and Cardinal Bisleti, prefect of the Sacred Congregation of Seminaries. An exceptionally large number of consecrations of new bishops and of translations to different sees was made in 1937. In the United States, three dioceses were raised to archdioceses: Detroit, Mich., Newark, N.J., and Louisville, Ky., and four new dioceses were erected: Lansing, Mich., Camden and Paterson, N.J., and Owensboro, Ky. For the first time in many years, every American see was filled.

In the work of the 11 congregations which carry on the executive functions at the Vatican particular interest attaches to the function of the Holy Office which deals with matters of faith and morals. This congregation listed six volumes on the index of forbidden books: *Etudes sur Descartes*, by L. Laberthoniere; *Klosterleben*, by Burchard Assmus; *Die Natuerliche-Geistlehere*, by Ernest Bergmann; and *Ragione et Fede, Gesu Christo et Christianesimo*, and *Il Vangelo con Introduzione* by Pietro Martinetti. Peculiar curiosity attaches, also, to the decisions of the Sacred Rota, the second of the three tribunals, or judicial courts. Decisions were rendered on 78 marriage cases; decrees of nullity were awarded in 34 cases; it is worthy of note that, in 21 of these annulments, the petitioners were so poor that they were unable to pay even the ordinary expenses of the judicial processes. There were no canonizations during the year. Pope Pius, during his pontificate of 15 years, has celebrated the extraordinary number of 24 canonizations and 39 beatifications.

In the diplomatic sphere, a *modus vivendi*, after a lapse in relations for 63 years, was signed by the Holy See and Ecuador on Aug. 9, 1937. The *modus vivendi* with Czechoslovakia, executed in 1928, began to be put into effect. The pope sent his special representative, Archbishop (now Cardinal) Pizzardo, to the coronation on May 12 of King George VI. Semi-official relations were entered into with the Nationalist Government in Spain by the exchange of Chargés d'Affaires.

The Concordat with Italy continued to be observed by both parties, and cordial relations existed. Acting as papal legate, Cardinal Dougherty, of Philadelphia, Pa., was formally received

by the Chinese authorities and the Japanese emperor.

**Japan and Spain.**—The anxiety of the church was centred on the conflicting nations. A newspaper report, internationally publicized, to the effect that the Vatican had issued instructions to the Chinese missionaries to aid Japan in the undeclared war in China, was emphatically denied. The structure of the church and the public practice of religion continued to be obstructed in Loyalist Spain, and the number of priests, religious and lay Catholics alleged to have been executed in Loyalist territory rose above 14,000. On July 1, the Spanish hierarchy sent a joint letter to the bishops of the world protesting against the Loyalist government. While there was a relaxation of active persecution of the Catholic Church in Mexico, the anti-religious decrees were neither repealed nor amended. During the year, however, a very vigorous forward movement of pacific Catholic action through education was solidified. In Soviet Russia, the Catholic Church remained in a state of collapse under the continued assaults of the atheistic régime. On several occasions, Pope Pius declared that the great heresy of this age was that of the materialistic and atheistic ideology of Communism.

**Germany.**—In Nazi Germany, where Catholics constitute about 33% of the population, the conflict with the church was intensified. On February 14, Cardinal Faulhaber, of Munich, accused the Nazis of having violated the Concordat with the Vatican, ratified Sept. 10, 1933. The papal encyclical of March 14, reinforced his charges in most vigorous terms. During the same month, the Nazi government refused to discuss the religious question with the Papal Nuncio, and on May 1, Chancellor Hitler warned that all churches opposing the totalitarian philosophy would be suppressed. By open and subtle means, the freedom of the church was circumscribed, the repute of Catholic leaders was scandalously assailed, Catholic youth organizations were disbanded and Catholic education forbidden. On almost every occasion when he spoke in public, but most especially at his address to the cardinals on Dec. 24, Pope Pius lamented the German persecution and assailed the Nazi leaders.

**Eucharistic Congress.**—The 33rd International Eucharistic Congress was opened on February 3 at Manila, Philippine Islands by Cardinal Dougherty, the papal legate, and was concluded on February 7 with a message broadcast from the Vatican by the pope. National Eucharistic Congresses were held throughout the world, notably that of July 11, at Lisieux, France, which was attended by about 300,000 pilgrims. Among the other memorable gatherings were those of the International Congress of Catholic Nurses, London, July 26; the congress of the Jeunesse Ouvrière Chrétienne, Paris, August 2; the pilgrimage to Aix-la-Chapelle, Germany.

**Missions.**—Missionary activities of the Catholic Church are carried on among the natives of every continent. India celebrated in December the 50th anniversary of the establishment of the hierarchy. During that period, the Catholic population increased from 1,660,000 to 4,000,000. China counts about 3,000,000 Catholics, among whom 1,750 priests labour; they and the religious congregations of women are conducting 415 orphanages, 236 hospitals and homes, and 1,002 clinics. The tendency in the Catholic Church is that of creating a native clergy and religious sisterhood. In Ceylon there are 800 sisters and three religious brotherhoods, entirely Singhalese. The newly formed Prefecture of Zenshu, Korea, is administered entirely by Koreans. Kimberly witnessed the ordination of the first coloured priest in South Africa. The flow of missionaries from Europe, and during the past decade more than ever, from the United States together with the great amount of money contributed for the propagation of the faith in foreign lands has brought an adequate return in conversions.

(F. X. T.)



**Romansch.** According to a decree of the Swiss federal council on July 8, 1937, Romansch, an offshoot of Latin, has become the fourth national language of Switzerland. This decision affects some 50,000 inhabitants of the Engadine, the Oberhalbstein, and the Grisons Oberland. It does not, however, change the Swiss constitution, which provides for three official languages (French, German, and Italian) in parliamentary and legal matters.

**Rome,** the capital (since 1870) and largest city (pop., 1936, 1,150,000) of Italy, including within its ambit the independent State of the Vatican city, is situated on the river Tiber, 17mi. from its mouth. The city is to be in 1941 the scene of an International Exhibition, to be held at Tre Fontane, near the church of San Paolo fuori le mura, on a site covering about 1,000ac., and early in 1938 it was announced that the town-planning scheme initiated in 1931 for the extension and modernization of the city, is to be implemented and modified so that the city will have largely changed its appearance before the date of the exhibition. An elaborate scheme of underground railways has been prepared, and exploratory shafts have been sunk: the lines proposed run from the central Termini station to the "Lido," for exhibition grounds, passing under the Palazza Venezia; to the Porta Pia and Piazza Verbano; to St. Peter's and the Viale Angelico; with suburban (partly surface) extensions to Frascati, Albano, Velletri, etc. The railways to the Alban hills, Rome's playground, are to be electrified and the Termini station is to be rebuilt 200ft. behind its present frontage line. The exhibition buildings so far as possible are to be of a permanent character, so that later they may be retained as part of the scheme of development for the country between Rome and Ostia, which is to be occupied by parks and garden villages. A new airport has been projected near the Magliana station; and two new motor roads are under construction connecting the centre of the city and the Trastevere with the exhibition grounds.

Other developments which made progress during 1937 include the restoration of the mausoleum of Augustus; the construction of the new Corso del Rinascimento which will improve communications between the Piazza Venezia and the Capitol and Prati; the construction of new shops and restaurants in the Trastevere district; and, with the concurrence of the Vatican authorities, the opening-up of the approaches to St. Peter's and the clearance of the Piazza di San Pietro.

**Roosevelt, Franklin Delano** (1882— ). On Jan. 20, Franklin D. Roosevelt took the oath of office for his second term as President of the United States. With the exception of the period from Aug. 21 to Nov. 15, Congress was in session virtually the entire calendar year. Legislative problems necessarily, therefore, required much of the President's time and attention.

With large Democratic majorities in both houses, the Seventy-Fifth Congress convened on Jan. 5. In his annual message on the state of the Union, the President on Jan. 6 reviewed the social and economic progress achieved by the American people during his first administration, dedicated himself again to the aims of the New Deal, and challenged the courts to join the march for social progress, or risk a curb on their powers. In his budget message two days later, he held out the hope of a "layman's balance" in 1938, with a complete balance of the budget and a resumption of public debt reductions in 1939. On Jan. 11, he asked Congress for a \$790,000,000 appropriation to finance Federal relief operations during the last five months of the fiscal year, and on Jan. 12, he laid before Congress his program for administrative reorganization.



THE PRESIDENT OF THE UNITED STATES broadcasting to the nation his "Fireside Chat"

Other legislative proposals of major importance soon followed. On Feb. 5, the President asked Congress for reforms in the Federal judiciary, and the authority to enlarge to 15 the membership of the Supreme Court. On Feb. 16, he submitted his farm tenancy message. On April 20 he requested a \$1,500,000,000 relief appropriation and on May 27, he urged Congress to "extend the frontiers of social progress" by enacting legislation banning child labour, and fixing minimum wages and maximum hours in industry. In May with a special message, he launched his drive against tax evaders. On June 3, he sent his regional planning message to Congress, in which he asked for the establishment of seven regional power agencies, and on June 8, in a special message, he proposed direct subsidies as part of a new plan for rehabilitating the American merchant marine. Though the President faced increasing opposition in Congress to his court reform and several other bills, he continued to press hard for their enactment until the first session of Congress adjourned *sine die* on Aug. 21.

The labour situation and the wave of sit-down and other strikes also engaged the President's attention during much of the year. On June 15, he said that concerns agreeing verbally to workers' collective bargaining contracts should sign such contracts. On June 17, he appointed a special board, headed by Mr. Charles P. Taft of Cincinnati to speed up the steel strike agreements, and on June 18, he dispatched Assistant Secretary of Labor Ed McGrady to Cleveland to do what he could to effect a mediation in the steel strike, and shortly afterwards asked steel mills to remain closed during the period of mediation. On July 11, he outlawed strikes among Government employees, and limited their powers of collective bargaining. On July 27, he defended the Federal Labor Relations Board against charges of bias, and two days later conferred with Governor Frank Murphy of Michigan on the strike and labour situation in that State. On Nov. 19, he ordered the Federal Trade Commission to investigate charges that the rise in living costs was due to monopolies, illegally operating.

During the first session of the Seventy-Fifth Congress, the President left Washington twice on holiday trips. In March, he spent two weeks in the South, and in May he went fishing off the coast of Texas. As his legislative program, including the court reform bill, was stalled on Capitol Hill, the President accepted an invitation to attend a "harmony" party of congressional Democrats at Jefferson Island. Lasting two days, it began June 25.



Following the recommittal of his Supreme Court bill, the President on Aug. 12, submitted to the Senate the nomination of Senator Hugo Black to fill the place on the Supreme Court made vacant by the retirement from active service of Mr. Justice Van Devanter. After the adjournment of Congress in late August, the President left Washington on Aug. 26, for his home in Hyde Park. He returned to the capital for his Constitution Day speech on Sept. 17, in which he hinted at a renewal of his drive to "reform" the Supreme Court.

On Sept. 22, he left Hyde Park for a 6,500-mile trip to the Pacific coast and back. On Sept. 30, he made a "good neighbour" visit to Victoria, British Columbia. The President made several important speeches on his western trip. Speaking at Bonneville dam in Oregon, on Sept. 28, he promised a balanced budget in 1938. At Chicago, on Oct. 5, he made his historic declaration in favour of a quarantine against aggressor nations. The ovations he received throughout the western trip seemed to indicate that his popular prestige, despite the reverses suffered in Congress, was substantially as great as it was a year before. This is believed to have been an important factor in his decision to call Congress in special session on Nov. 15.

In a radio speech on Oct. 11, the President sought popular support for the program of the special session, the call for which was issued the next day. The program included wages and hours, agricultural control, Federal reorganization, and regional planning. On Oct. 18, in a revised budget statement, the President indicated a deficit for the year of \$695,000,000. He ordered a liquidation of PWA and RFC, and laid upon Congress the main responsibility for the deficit. On Oct. 21, he appointed his eldest son, James, a White House secretary, as co-ordinator of eighteen independent federal agencies. On Oct. 23, he warned Congress that the additional costs of the new farm bill must be covered by new taxes. Prior to the opening of the special session, the President spent about two weeks at Hyde Park. During his occupation as a "farmer," he voted at Hyde Park on Nov. 2, and two days later conferred in New York city with Fiorello La Guardia, re-elected mayor.

An economic recession, setting in in the autumn months, diverted Congressional and public attention from the Administration's legislative program for the special session, to the business and economic problems facing the nation. On Nov. 18, an abscessed tooth was extracted. A few days later he left Washington for a fishing trip in Florida waters, but cut his fishing cruise short to return to Washington for treatment of his sore gums. As a means of speeding up industrial production, the President in a message on Nov. 29, urged revision of the Federal Housing Act, and a private housing drive for from \$12,000,000,000 to \$16,000,000,000 of new construction in the next two years.

On Nov. 30, the President in a message, asked Congress for a \$100,000,000 a year reduction in Federal aid for the construction of highways. He attended the semi-annual Gridiron Dinner on Dec. 11. On Dec. 17, at a press conference, he indicated his strong opposition to the war referendum plan. In a letter to Chairman Taylor of the House Appropriations Committee, the President, on Dec. 27, indicated his intention of asking for a supplemental naval construction. Previously, on Dec. 21, the special session had adjourned, without taking final action on any of the President's legislative recommendations. (O. McK.)

**Root, Elihu** (1845-1937), American lawyer and statesman who rendered distinguished service as Secretary of War in President McKinley's Cabinet and as Secretary of State in President Theodore Roosevelt's Cabinet. The crowning event of his career was the protocol, formulated in 1929, whereby the United States was able to join the Permanent Court of

International Justice; this protocol was adopted by the special committee of international jurists and by the Council of the League of Nations. In recognition of his efforts to smooth the path for the United States to join the World Court, he was awarded the American Bar Association medal in 1930. The previous year he had received the gold medal of the National Academy of Design for having drawn the bill creating a National Fine Arts Commission and for reviving L'Enfant's plan for the beautification of Washington. His death occurred in New York city, Feb. 7, 1937. The reader will find an account of his career in the *Encyclopædia Britannica*, vol. 19, p. 542.

**Roque:** see CROQUET AND ROQUE.

**Rose, Sir (Hugh) Arthur** (1875-1937), Bt., D. S. O. LL.D., British social economist. He was educated at Harrow and Trinity college, Cambridge. He was for many years active as an educationist in Scotland, being, from 1920 to 1924, chairman of the advisory council to the Scottish education department, but his interests were wide and various. He was food commissioner for Scotland, 1919-20; director of land settlements, Scotland, 1920-22; and chairman of the general board of control for Scotland, 1922-36. From 1934 to 1936 he was commissioner for Scotland under the Special Areas Act. He was knighted in 1919 and created a baronet in 1935. He won the D.S.O. in 1917 while in command of the 15th battalion of the Royal Scots. He died in Edinburgh, Aug. 14, 1937.

**Rosenwald Fund, The Julius.** The Rosenwald Fund differs from other large American foundations in that the trustees are not only permitted to spend capital as well as income at any time but are compelled to expend all its funds within twenty-five years of the death of its founder, that is, before Jan. 6, 1957. During the two decades since its establishment in 1917 by Julius Rosenwald, this fund has expended approximately fourteen million dollars (\$13,927,846), being all of its income from year to year and about two-thirds of its principal fund. At the close of the past fiscal year, June 30, 1937, the capital of the fund (held chiefly in capital stock of Sears, Roebuck & Co. of Chicago) had a value of approximately six and a half million dollars (\$6,534,637).

The chief program of the fund during its early years was aid in the building of rural public schools for Negroes. The main programs at present are (1) improving the content and quality of rural education in both white and Negro schools in the South; (2) aid in building up four important centres of higher education for Negroes: Howard university in Washington, D.C., Atlanta university in Atlanta, Georgia, Fisk university in Nashville, Tennessee, and Dillard university in New Orleans; and (3) a series of fellowships for Negroes and for white Southerners. During the past year the fund expended \$691,763 upon these and related programs.

**Rothschild, Lionel Walter Rothschild,**

2ND BARON (1868-1937), F.R.S., British zoologist; born in London, Feb. 8. He was educated at Bonn and Magdalene college, Cambridge, and represented the Aylesbury division of Buckinghamshire in Parliament as a Liberal-Unionist from 1899 to 1910. He became a trustee of the British museum in 1899, was elected an F.R.S. in 1911, and in 1915 succeeded his father as Baron Rothschild of Tring. Lord Rothschild was known to the public chiefly as the founder and maintainer of the private zoological museum at Tring, of its kind one of the most complete





UNIVERSITY OF WASHINGTON CREW, winner of the intercollegiate national rowing title in 1937

and best-equipped privately-owned institutions in the world. In 1932 the burden of maintaining this museum proved so heavy that he was compelled to sell his collection of birds to the United States. Lord Rothschild was unmarried, and is succeeded, as 3rd baron, by his nephew, Nathaniel Mayer Victor Rothschild. The late baron wrote, as well as numerous articles on zoology, *Avifauna of Laysan*, and was joint-editor of *Novitates Zoologicae*, published at the Tring zoological museum. He died at Tring Park, Herts., Aug. 27, 1937.

**Roussel, Albert** (1869-1937), French composer, was born at Tourcoing, April 5, 1869. After four years in the navy following graduation from the Naval School, he studied at the Schola Cantorum from 1894 to 1902 and joined the teaching staff after a year in Italy. He composed constantly during these years, but it was only following his service in the World War that he revealed his greatest talent and secured international recognition. Since the compositions listed in the *Encyclopædia Britannica*, vol. 19, p. 587, he composed *La Naissance de la Lyre* (1925) and the ballet, *Bacchus and Ariadne* (1930). He died in Paris, Aug. 24, 1937.

**Rowell Commission, The:** see CANADA: *The Rowell Commission*.

**Rowing.** The 1937 intercollegiate rowing season opened April 17 with the 34th annual California-Washington regatta on the Oakland estuary in California and an informal race between Columbia university and Manhattan college in New York city. Washington scored a clean sweep for the second successive year, winning the varsity, junior varsity and freshman races by wide margins. The personnel of the Washington varsity was, except for two positions, the same as that of the 1936 crew which won the Pacific coast and Poughkeepsie regattas and the Olympic championship at Berlin. Columbia likewise opened with a clean sweep over their less-experienced Manhattan opponents.

The Eastern college rowing season opened officially April 24 with three regattas. The Naval Academy crews won sweeping victories at Annapolis over Columbia in the varsity, junior varsity and freshman races. The annual Compton Cup regatta between Harvard, Princeton and the Massachusetts Institute of Technology was won by Harvard on Lake Carnegie in a very close race. Rutgers defeated Manhattan on the Raritan river. The Blackwell Cup race was held May 1 on the Harlem river and the Yale varsity won by several lengths with Columbia beating

Pennsylvania for second place. The Navy crews again scored a clean sweep on the same day. Racing Princeton and Syracuse on Lake Carnegie the veteran midshipman varsity was soundly tested over the entire mile and three-quarters course and showed promise of being a championship crew. The Harvard crews won all races over Rutgers and Massachusetts Institute of Technology in the Rowe Memorial Cup regatta on the Charles River Henley course.

Two regattas on May 8 found Navy and Harvard decided pre-race favourites. The Navy crews won their third consecutive clean sweep, this time at the expense of Cornell, who were making their début in the current racing season. The Cornell crews showed promise even in defeat. Harvard crews likewise continued their winning streak, overwhelming Columbia and Massachusetts institute on the Charles in all races. Two important races were held on May 15. The Childs Cup regatta was won by Princeton, defeating Pennsylvania and Columbia in that order after a gruelling race over the Henley distance on the Schuylkill river. The Harvard varsity held its undefeated position by vanquishing Cornell, Syracuse and Massachusetts institute, thus scoring its fourth consecutive victory. The following Saturday, May 22, Yale finished its short distance season undefeated, winning the Carnegie Cup race over Princeton and Cornell. The Princeton crew continued its fine performance of the previous week and gave Yale a close race over the entire two miles on the Housatonic, losing by a half length. The Adams Cup race was a fitting climax for the Eastern short distance racing season. The undefeated crews of Harvard and Navy were pitted against each other in a triangular race which included Pennsylvania. Shortly after the start the two favourites were battling each other on practically even terms and paying little attention to Pennsylvania which had surprisingly gone out to a half-length lead. Against two such powerful crews Pennsylvania had wisely determined to take the lead at all costs. A half mile from the finish they still retained their lead, but shortly thereafter the pace proved too much and Navy slowly forged into the lead, closely followed by Harvard. Rowing a much lower stroke Navy warded off the high stroke of the Harvard sprint and crossed the finish line slightly ahead. The freshmen and junior varsity crews having previously won their races the jubilant Navy oarsmen could now head for Poughkeepsie with the record of four consecutive clean sweeps and were thus established as worthy challengers of the Washington supremacy. That same day at Ithaca Syracuse defeated Cornell in a close race by one length.

*The Poughkeepsie Race.*—Seven varsity crews lined up at the



start of the annual Poughkeepsie race in the late afternoon of June 22nd. The Washington freshman and junior varsity crews had already done their share toward a clean sweep by winning with ease and the powerful Navy crew seemed the only entrant capable of defeating the Washington varsity. True to predictions the race soon settled into a battle between Navy and Washington, but by the half-way mark Washington had firmly established a lead and from there to the finish drove steadily ahead. Navy in desperately trying to hold to them were nearly overtaken in the closing minutes by a fine rowing Cornell crew. Washington crossed the line the winner by about three lengths and in this victory established a record not equalled in the history of the Poughkeepsie regatta, making a clean sweep of the three races for two consecutive years. The other crews, in the order finished, were Syracuse, California, Columbia, and Wisconsin.

*Yale-Harvard Regatta.*—The seventy-fifth Yale-Harvard regatta brought to a close the intercollegiate rowing season. The evening of June 25th the two varsity crews lined up near New London on the Thames for the four-mile race up-stream. The Harvard crew, defeated only by Navy, was the favourite by virtue of its easy victory over Yale the year before, but a greatly improved Yale crew which had come through the short distance races undefeated promised a close and stirring race. Yale took the lead at the start, but soon relinquished it and by the half-way mark Harvard, rowing several strokes lower and leading by nearly two lengths looked an easy winner. Coming into the three-mile mark Yale began cutting down this lead and a half mile from the finish was lapping the stern of the Harvard shell. Over the last quarter mile both crews raised their strokes to nearly forty to the minute and Harvard slowly forged ahead again to finish slightly more than a length in front of the game Yale crew. Both crews broke the course record under moderately fast conditions.

In the lightweight branch of intercollegiate rowing Massachusetts institute won the Joseph Wright Challenge Trophy by defeating Harvard, Yale, Cornell, Princeton, Columbia, and Pennsylvania and the Yale crew won the Yale-Harvard-Princeton championship. The third annual interscholastic rowing championships were rowed at Worcester, Mass., on May 29th, bringing to a close the school-boy rowing season in the United States. Tabor academy won the senior and junior eight-oared races and Brooks school the senior four-oared race.

(E. O. LE.)

*Great Britain.*—For its chief event, the year 1937 will be remembered for the fact that Oxford brought the long term of 13 Cambridge successes to an end. Cambridge, early in preparation, suffered a loss of the first magnitude when their president, W. G. R. M. Laurie, accepted a post in the Sudan civil service. A born stroke and an oarsman of the first class, there was no one adequately to replace him. On the other hand, paradoxical though it may seem, the lion's share of the credit for Oxford's victory must be given to their president, J. S. Lewes, who at the end of training was not found good enough to be included in the crew which he had done so much to make.

For the first time for some years, Lewes decided to rely on old Oxford Blues for coaching, and obtained the help of Dr. P. C. Mallam (1921, 1922, 1923, 1924), Mr. G. O. Nickalls (1920, 1921, 1922, 1923), and Mr. W. Rathbone (1926, 1927). The Cambridge coaching was undertaken by Sqdn.-Ldr. F. E. Hellyer (1910, 1911), Mr. J. Beresford, Jr., of Thames R.C., Mr. J. F. R. Best, the old Pembroke stroke, and Mr. K. M. Payne (1932, 1934). After Laurie's departure, H. W. Mason, the "two" of 1936, was considered likely to stroke the crew, but he met with an accident during the vacation, and could not row until a month before the race.

Just before the race, changes were made in the bows of the Oxford crew, D. R. B. Mynors (1935) being replaced by R. R. Stewart, and Lewes by D. M. de R. Winsor (1935, 1936). The general public saw only fatal indecision in these changes, and Cambridge started favourites. They won the toss and took the Surrey side.

After a false start, Mr. Harold Rickett (Cambs. 1931, 1932), the umpire, got the crews away. Owing to the great amount of land water meeting a slack neap tide, the time was bound to be slow, and a light westerly wind did nothing to assist the crews at any point. At the end of a minute at the higher rate Cambridge had a substantial lead, but Hodgson crept up to lead by a few feet at the mile post (4mins. 39secs.). Repeated spurts kept Cambridge on terms, but Hodgson never allowed them to gain more than a few feet. At Hammersmith, in great danger of a foul, the boats were level (8mins. 24secs.). Along the Eyot, Perfitt made several spurts, but Hodgson always drew him back, and was leading at Chiswick Steps (13mins. 3secs.). After giving way to avoid a foul, the Oxford crew gained steadily up the Duke's Meadows, and were clear at Barnes Bridge (19mins. 34secs.). Though Cam-

"SHOOTING HAMMERSMITH BRIDGE" in the Oxford and Cambridge boat race, won by Oxford





bridge spurted all the way home, Hodgson did not raise the rate until the Brewery, and then went away very fast to win by three lengths in 22mins. 39secs.

On Easter Sunday the Oxford and Cambridge crews raced against two Paris crews on the Seine, each of the English crews winning comfortably. In the summer Eights at Oxford, Oriel lost the Headship to New College, while in the Mays at Cambridge, Jesus retained their position.

At Henley Royal regatta, English oarsmen met with defeat in three events—the Rudergesellschaft Wiking crew from Germany winning the Grand Challenge Cup; J. Hasenohrl, Ruderverein Ellida, Austria, taking the Diamond Sculls; while Tabor Academy, U.S.A., won the Thames Cup for the second year in succession.

In their heats the Germans beat New College easily and London R. C. by  $2\frac{1}{2}$  lengths, but in the final they were given a splendid race by Jesus College, Cambs., a resident undergraduate crew. At Fawley the English crew had three-quarters of a length, but at the mile the boats were dead level. In the spurt home the Germans went away to win by half a length in 7mins. 33secs. in a strong head-wind.

Coulson, the Canadian sculler, was undoubtedly Hasenohrl's strongest competitor, and met him in the final of the Diamonds, but the race was robbed of all interest when Coulson hit the piles above the quarter-mile when leading slightly.

Tabor Academy were not quite as fast as in 1936, when they beat Kent School, U.S.A. in the final of the Thames Cup, and London R. C. "B" crew were on terms with them to the enclosure, when the American boys went away to win by one length in the fastest time of the day, 7mins. 31secs., the head-wind having dropped considerably. In the other events, Clare, Cambs., won the Ladies' Plate, beating the holders, First Trinity, in the final. Leander, with a good crew, won the Stewards' Cup, while Trinity Hall won the Visitors' easily from Oriel. London R. C. "B" crew won the Wyfolds, and E. W. Wingate and W. D. Baddeley, Vesta R. C., won the Goblets.

During the year, the A.R.A. widened the definition of an amateur oarsman by deleting all reference to manual or menial labour as a bar to the status. The stewards of Henley regatta accepted the alteration, and further deleted their rule forbidding professional coaching. These alterations took effect on Jan. 1, 1938.

In professional sculling, Eric Phelps retained the title of champion of England, and won a stake of £200 from Lou Barry in a race from Putney to Mortlake on March 29. There was a splendid struggle to Chiswick Steps, but after that Phelps went away to win by five lengths in the slow time, due to bad conditions, of 24mins. 50secs. (G. C. D.)

## Royal Academy of Arts.

During the year (from Nov. 1936), the following elections were made: Royal Academicians (R.A.)—F. Cadogan Cowper, Dame Laura Knight, Gilbert Ledward, Sir Edwin Cooper, Gerald Brockhurst (all previously A.R.A.'s.); Associates (A.R.A.)—Charles Cundall, Eric Gill, Stephen Gooden, James Woodford, C. H. James. The annual summer exhibition at Burlington house, Piccadilly, London (169th; May 3–August 7; 722 oil-paintings, 367 water-colours and miniatures, 168 sculptures, etc.) attracted 102,000 visitors. A coronation year feature was an historical series, "Royal Patrons of the Royal Academy," with "H. M. King George VI," by Simon Elwes.

Though representative of current trends in technique, the exhibits included no work of a dozen or more representative British artists, such as W. R. Sickert and Stanley Spencer, who had resigned from the academy, Wilson Steer, Paul Nash and Jacob

Epstein. There is a growing tendency for artists to exhibit in London galleries. Even some leading painters seem, today, to take the composition and lighting of posed subjects as they happen to come. Perhaps accordingly, landscapes were a step in advance of portraiture in interest; still life and nudes were out of favour. While there was, by general consent, no "picture of the year" "The Founding of Australia by Captain Arthur Philip, R.N.," by Algernon Talmage, R.A., drew much attention. Sir William Llewellyn, president (since 1928), announced that the winter exhibition (Jan. 3–March 12, 1938) will be of 17th-century European art.

An innovation was the architectural exhibition, held at Burlington house during the autumn—virtually a review of leading designs of the present century. (H. Fw.)

**Royal Canadian Mounted Police:** *see* POLICE.

## Royal Geographical Society.

There was a marked increase in the strength of the society. Of expeditions in which the society is interested several completed their work. The British Graham Land expedition (leader, John Rymill) returned after  $2\frac{1}{2}$  years in the Antarctic; Mr. R. Kaulback completed a valuable survey of the Salween valley and surrounding areas in S.E. Tibet; consul, Lars Christensen discovered new land and new mountain ranges in the Antarctic; Chomolhari was climbed in May by F. S. Chapman, and other mountaineering expeditions were completed, notably that by F. S. Smythe, who made valuable plant collections in the Himalayas. The society completed a map of the Karakorum which has had the approval of the surveyor-general of India. Many lectures were delivered during the year, and the use of the instruction room by intending travellers continues to grow.

## Royal Institution of Great Britain.

The lecture program was varied in character, and afternoon courses and evening discourses by the professors of the institution and others on scientific subjects, literature, history, and music, included a number of experimental lectures. The year was completed with a course of juvenile lectures on "Rare animals," by Dr. J. S. Huxley. The general program of the Davy Faraday research laboratory (Director, Sir Wm. Bragg) dealt mainly with the connection between the physical properties of organic substances and their structure and with structure determination of organic crystals by aid of X-rays. Work was started on the application of short electric waves to the study of organic solids and the extension of optical investigations towards the infra-red.

## Royal Society of London.

The society completed 275 years of existence. It was decided that 20 fellows will be elected annually in the future instead of 17. The total expenditure authorized for research was £33,500. The council arranged, through the development commissioners, for a grant of £5,100 for capital expenditure and £3,500 a year for five years to cover the cost of intensive study of the Gulf Stream and Atlantic Drift which are thought to affect fisheries of the United Kingdom. The Pilgrim Trust offered 250 guineas annually for six years to allow an annual lecture, to be arranged jointly by the Royal Society and the National Academy of Sciences, to be given alternately in London and Washington. On November 30, Sir Wm. Bragg read his presidential address on "The grain-like structure of solids." Medals were awarded as follows: *Royal*, Prof. N. V. Sidgwick, Prof. A. H. R. Buller, Copley, Sir Henry Dale. *Davy*, Prof. Hans Fischer. *Sylvester*, Prof. A. E. H. Love. *Hughes*, Prof. E. O. Lawrence.



**Ruanda and Urundi:** *see* BELGIAN CONGO.

**Rubber and Rubber Manufacture.** During 1937 the rubber industry made technological progress in many ways. The most notable development of new material was the expansion in Germany of manufacturing facilities for the synthetic elastic, Buna. Varieties of Buna have proved superior to natural rubber in resistance to abrasive wear, oil, heat and diffusion of gases and it is predicted that further increased production will reduce its cost to a competitive level. Only recently have these synthetics been made available outside Germany. In America improvements in the synthetics, Thiokol and Neoprene, have promoted their use in services for which their striking resistance to oils, solvents or sunlight oxidation render them superior to rubber. Uses with rubber of the chemically inert poly iso butylene have also been developed. Koroseal, plasticized gamma polymer of vinyl chloride, has found new applications where sufficient resistance to oils, corrosive chemicals or water and non-inflammability could not be attained by rubber compounding. In Germany, also, similar products have been utilized extensively. Neoprene and Koroseal have interested cable manufacturers as insulators highly resistant to ozone. Of scientific interest was the description from France of an inorganic rubber-like material consisting of polymers of phosphonitrile chloride. Shipping of pellet carbon black in bulk instead of packages is increasing, producing savings in handling costs. New softeners for rubber, acids produced by oxidation of petroleum, have also been introduced. Patents issued in various countries evidence continued research and accomplishment in the study of organic accelerators and age resisters. Additional accelerators inert at milling heat but rapidly active at vulcanizing temperatures have been discovered. Notable, too, was the discovery of an age resister, hydroquinone mono benzyl ether, non-staining on exposure to light, which imparts to rubber compositions excellent flexure resistance in addition to retarding their deterioration.

In America the improvement of tires for high speed service through the use of rayon cords was a striking innovation in the use of textile materials; but newly developed cotton cords, characterized by low permanent set after stretching, produced tires of even better quality.

**Processing.**—Researches in plastication of rubber have resulted in improving this important operation. Plasticators are now designed for operation at temperatures much higher than were formerly employed, producing rubber of greater plasticity at lower cost. Chemical softening by addition to the rubber, during plastication, of small proportions of certain hydrazines or thio-naphthol has proved valuable, also. For rubber cements a new type of closed mixer in which a swirling motion is imparted by propeller-type stirrers, top and bottom, greatly reduces solvent losses and speeds the dispersion of the rubber. For forming articles from Neoprene dispersions methods have been perfected similar to the Anode process for deposition of rubber from latex.

**Products.**—As in former years, the usefulness of rubber has extended into new fields. New or increased uses were developed for Pliofilm as package wrappings, bottle seals, rain capes and umbrellas. Elimination of noise and vibration by supporting machinery on rubber in shearing suspension has proved effective. In several American cities several hundred street cars recently equipped with similar shear type rubber springs ride more quietly and smoothly than those mounted on steel springs. The use of sponge rubber for cushioning seats in railroad cars and automobiles, first adopted in England, has increased rapidly in America. For gasoline hose, linings of Neoprene containing imbedded wires to ground static charges largely replaced in manufacture the older

## RUANDA AND URUNDI—RUMANIA

flexible metal tubes with rubber sheaths.

Rubber plates for printing food wrappers, telephone directories and business forms have found increasing use. The utility of transmission belting has been increased through the invention of a portable vulcanizer and a special splicing technique enabling purchasers to make belts endless wherever they are to be used. A long-standing need for improved sealing of bell and spigot joints in clay pipe is now satisfied by rubber rings which hold without leakage against pressures capable of bursting the pipe. Rubber sealing strips for joints in concrete roads or abutments overcome disadvantages of poured fillers. Substitution on tractors of the many-jointed metal bands by endless rubber tracks permits faster travel, decreases wear and increases fuel economy. Rubber putty, permanently flexible, has proved valuable for greenhouses and other metal sash windows where expansion or vibration cause ordinary putties to crack and loosen. For information on synthetic rubber *see* also CHEMISTRY, APPLIED; INDUSTRIAL RESEARCH.

**BIBLIOGRAPHY.**—Among publications, *The Chemistry and Technology of Rubber*, compiled under the auspices of the American Chemical Society is of outstanding value. (J. W. Sc.)

**Rubber Footwear:** *see* SHOE INDUSTRY: *Rubber Footwear*.

**Rubio y Lluch, Antoni** (1856–1937), Spanish Catalan scholar; born at Valladolid, July 24. He was for 41 years professor of Spanish literature at the University of Barcelona; and since 1904 was professor of Catalan literature at the Institute of Catalan Studies. One of the finest Catalan scholars who have lived, his most enduring monument is, perhaps, the *Documents for the Study of Mediaeval Catalan History*. He died at Barcelona, June 9, 1937.

**Ruby:** *see* GEMS AND PRECIOUS STONES.

**Rugby:** *see* FOOTBALL: *Great Britain*.

**Rumania**, a monarchy of S.E. Europe and member of the League of Nations. Bounded W. by Hungary, N.W. by Czechoslovakia, N. by Poland, E. by the U.S.S.R., S.E. by the Black sea, S. by Bulgaria, S.W. by Yugoslavia. Ruler, King Carol II. Flag, blue, yellow, and red in vertical stripes.

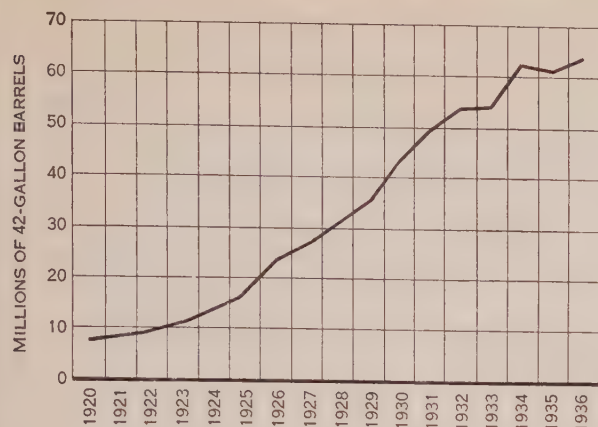
**Area and Population.**—The area is 113,884 sq.mi.; estimated population (1936), 19,423,000. Of these, about three-quarters are Rumanians, and members of the Orthodox or (in the case of a part of the Transylvanian Rumanians) the "Uniate" Church. The Magyars (Catholic, Protestant, and Unitarian) number about 1,500,000. They live chiefly in Western Transylvania and the "Székely" districts of E. Transylvania. The 750,000 Germans are chiefly in the Banat (Catholic) and Transylvania (Lutheran). The 5–600,000 Ukrainians, 1–200,000 Russians, and perhaps 250,000 Bulgars inhabit Bessarabia and the Dobruja. The Jews (about 1,000,000) are chiefly in Moldavia and Bessarabia, but not rare in any part of the country.

The chief towns, with estimated population (1936) are: Bucharest, 641,421; Chişinau, 114,954; Cernauti, 110,609; Jaşi, 104,523; Galati, 102,106; Cluj, 99,496; Timişoara, 99,349; Oradea Mare, 81,413; Ploest, 76,773; Arad, 76,333; Brăila, 68,981; Braşov, 60,556.

Education is free and compulsory. In the Old Kingdom, it is in the hands of the State; the national minorities in Transylvania are allowed to use the Confessional system.

**History.**—A swing towards "fascism" of some sort has been apparent in recent Rumanian politics. The resignation of M. Titulescu as foreign minister (Aug. 29, 1936) inaugurated a period more sympathetic to Germany and Italy and even more cautious towards the U.S.S.R. Although Rumania still held by the Little





CRUDE PETROLEUM PRODUCED in Rumania

Entente, her relations with Poland, marked by many exchanges of visits, grew closer. In internal politics, an increasing agitation, directed mainly against Jews, but also against the other national minorities, was conducted by the parties of the extreme Right, under the slogan "Rumania for the Rumanians." In Dec. 1937 general elections were held, and although they were conducted by the Liberal Party, that party, in alliance with the Rumanian Front, the National Democrats, and the Germans, secured—to the general astonishment—only 152 seats out of 387, the National Peasants securing 86, the "All for the Fatherland" (the proscribed "Iron Guard" under another name) 66, the National Christians 39, the Magyars 19, the Dissident Liberals 16, and the Radical Peasants 9. More surprisingly still, the king entrusted the Government to M. Goga, the leader of the National Christians, who on Dec. 29 formed a cabinet consisting of members of his own party, with 4 National Peasants, who were promptly expelled by their own party. M. Codreanu, leader of the "All for the Fatherland," expressed his sympathy. The year closed amid great uneasiness among many sections of the population, particularly the Jews.

**Trade, Communications, Finance.**—The monetary unit is the leu, nominally equal to 0.5982 gold cents, but now considerably depreciated. The budget was balanced in 1936–37 at 29,887.2 million lei, and for 1937–38 a balanced budget of 28,698.2 million lei was estimated. The foreign trade has recently increased rapidly, with a large export surplus (1935, imports 10,884,753 million lei; exports, 16,756,223 million lei). The chief exports are petroleum and wheat. Agriculture remains the backbone of the national economy. The young industry is being fostered by protection; the average of industrial employment for 1936 was 153 (average 1925–29, 100). Industrial unemployment is low; wages are, however, exceedingly small.

**Defence.**—Military service is compulsory and universal. The budgetary effectives of the army in 1937–38 numbered 14,890 officers and 49,525 other ranks. Rumania is re-equipping her army, and in 1937 placed large orders for that purpose with Czechoslovakia. A line of fortifications is planned to extend around the entire country. (See also ANTI-SEMITISM; LITTLE ENTENTE.) (C. A. M.)

**Runciman, Walter Runciman,** 1ST BARON OF SHORESTON (1847–1937), British shipowner; born July 6. He went to sea before the mast as a boy, obtained his master mariner's certificate in 1871, and gradually acquired his own fleet of ships. Eventually he founded, and was senior partner of, Walter Runciman & Co., Ltd., of New-

castle-on-Tyne; was chairman and managing director of the Moor line, and, in 1935, became chairman of the new Anchor line. From 1910 to 1911 he was president of the chamber of shipping of the United Kingdom. From 1914 to 1918 he was Liberal M.P. for Hartlepool. He was created a baronet in 1906, and was raised to the peerage in 1933. His only son is the present Viscount Runciman. Lord Runciman's publications include *Windjammers and Sea Tramps* (1903); *The Shellback's Progress in the 19th Century* (1905); *Looking Seaward Again* (1907); *The Tragedy of St. Helena* (1911); *Drake, Nelson, and Napoleon* (1919); *Before the Mast—and After* (1924) autobiography; *Collier Brigs and their Sailors* (1927); and a series of *Sunbeam Logs*. He died at New-castle-on-Tyne, Aug. 13, 1937.

**Running:** see TRACK AND FIELD SPORTS.

**Rural Electrification.** Extensive construction of new rural electric lines marked the progress of rural electrification in 1937. In the United States more than 225,000 rural families received electric service for the first time and more than 150,000 of these new customers were farm families. This indicates a gain of approximately 50% over the number of farms electrified in 1936. At the end of 1937, about 1,200,000 or 18% of the farms of the United States were electrified.

The rural electrification program of the Federal Government made an important contribution to activity in the field of rural electrification. This program stimulated rural line construction by the private utilities to such an extent that they expected to build in 1937 41,000 mi. of rural distribution lines—9,000 mi. more than they constructed in 1936. Projects financed by the Rural Electrification Administration completed about 15,000 mi. of new rural distribution lines during the year, and had approximately 50,000 mi. more under construction.

Prior to the Federal Government taking an active part in assisting the farmer to secure electricity, practically all farms served with electricity were served by private utilities. As a result of the activities of the Tennessee Valley Authority and those of the Rural Electrification Administration, a small but increasing percentage of farms are being served by farmer owned and controlled distributing systems. During 1937 important modifications in State statutes, in new rulings of public service commissions, and in government loans contributed to this trend.

Increasing emphasis during the year was placed upon developing increased use of electricity in rural areas. Education of the farmer in the many advantageous uses of electricity made him desire its more abundant use and somewhat lower rates made it possible for him to gratify this desire. The increases reported in the sales of electric appliances in rural areas provide evidence of an increase in the average consumption per customer during the period.

In Great Britain progress resulted from the gradual extension of rural electric distribution lines. It is estimated that a total of 30,000 farms were receiving electricity in 1937. This figure may be contrasted with 25,000 in 1936 and 4,000 in 1932. As in Great Britain there are reported to be nearly 450,000 farms and small holdings of over one acre, it will be seen that only a small proportion of the total are as yet connected.

Various demonstration schemes reported increasing success in securing additional customers and in increasing the average consumption per customer. A number of new proposals were advanced for the supply of electricity in undeveloped portions of the areas of supply of various undertakings and approved proposals were advanced during the year.

The record of existing rural lines in Great Britain, and the lessons learned from pioneering work in rural electrification are



making it possible to consider with confidence comprehensive plans for the extension of rural electric lines. Engineering difficulties have been overcome and there is a more general appreciation of the financial feasibility of rural electric development when reasonable time is allowed for a development period, and when all costs including construction and operation are kept low and free from extraneous charges of all sorts. (See also ELECTRICAL ENGINEERING; ELECTRIC TRANSMISSION AND DISTRIBUTION: *Distribution*; ELECTRIC TRANSPORTATION; PUBLIC UTILITIES.)

(J. M. CY.)

**Rural Electrification Administration:** see ELECTRICAL INDUSTRIES.

**Russia:** see UNION OF SOVIET SOCIALIST REPUBLICS.

**Russian Arctic Fliers:** see ARCTIC EXPLORATION.

**Russian Literature.** The commemoration in 1937 of the centenary of Pushkin's death consecrated the recent tendency towards a revaluation of literary and artistic values in a sense hostile to revolutionary modernism. It gave rise to a vast literature of a biographical, historical, and critical character.

The slogan of "Socialist realism," proclaimed in the U.S.S.R. since 1932, continues to preside over Soviet literature. The actual literary output during 1937 has been rather scanty; a new novel by Ehrenburg on the topical subject of the Spanish civil war, *Chto cheloveku nado* (*What Man Needs*); a short novel by Valentin Kataev, *Ya, syn trudovogo naroda* (*I, Son of the Toiling People*), dealing with the civil war in the Ukraine in 1918-19; Pavlenko's much-discussed and greatly praised *Na Vostoke* (*In the East*), a kind of military Utopia describing Soviet activities in the Far East and the future war with Japan; the fourth volume of Sholokhov's *Tikhly Don* (*The Quiet Don*); Alexey Tolstoy's *Khleb* (*Bread*), retrospective in subject but topical in its glorification of Stalin and Voroshilov; and the first two parts of Tynyanov's *Pushkin*, a novelized biography—such is the balance-sheet of the year's notable fiction. Nor has anything outstanding appeared in the domain of poetry and drama. One of the features of the year's literary life has been the official press campaign against a number of poets, playwrights, and critics, including the leading Soviet Russian poet, Boris Pasternak, who has been attacked for his individualistic, non-political, and unpatriotic attitude. Other victims came from the opposite camp, as e.g., the poets Bezymensky (who at one time aspired to the role of the Soviet poet-laureate) and Tretyakov (author of the well-known propaganda play *Roar, China!*), and the playwrights Afinogenov and Kirshon, whose popularity was extremely great during the period of the first five-year plan. Afinogenov, Bezymensky, and Kirshon in connection with the political drive against "Trotskyism," have been expelled from the Communist Party. The "anti-modernist" (or, in Soviet terminology, "anti-formalist") campaign begun in 1936 at Stalin's personal initiative with the attacks on the well-known composer Shostakovich, culminated in Dec. 1937 in the "disgrace" of the famous theatrical producer, Meyerhold.

Four writers—Korniyuchuk, Sholokhov, Stavsky, and Alexey Tolstoy—had the honour of being elected to the new Soviet parliament.

Three prominent men of letters died in the U.S.S.R. during 1937: Alexey Chapygin (b. 1870), author of the historical novel *Razin, Stepan* and other works; Ilya Ilf, joint author with Evgeny Petrov of two successful satirical novels (*Twelve Chairs* and *The Golden Calf*), and of numerous short stories; and Suleiman Stalsky (b. 1869), the *ashug*—or national bard—of Daghestan.

Almost the only outlet of Russian literature outside Russia is

the sole surviving émigré review—*Sovremennyya Zapiski* (Paris). Among the individual fiction works of the year may be noted Aldanov's *Peshchera* (*The Cave*); the first instalments of Nabokov-Sirin's *Dar* (*The Gift*); and Boris Zaitsev's *Puteshestvie Gleba* (*Gleb's Journey*), the first part of a vast work of obviously autobiographical nature, somewhat akin to Bunin's *Life of Arsenyev* (*The Well of Days*).

By the sudden death, in Paris, of Evgeny Zamyatin (b. 1884) Russian literature has sustained a heavy loss. The return to the U.S.S.R. of the well-known novelist Kuprin was the first case of its kind since the return of Alexey N. Tolstoy in 1922. (G. ST.)

**Russian S.F.S.R.** (The Russian Soviet Federated Socialist Republic) is in area and population the largest, and politically, economically, and culturally, the most important republic of the Soviet-Union; bounded N. by the Arctic ocean; W. by Finland, Estonia, Latvia, White Russia, and the Ukraine; S. by the Black sea, the Transcaucasian republics; Kazakhstan, Mongolia, and Manchoukuo; E. by the Pacific ocean and Japan. Capital, Moscow. Flag, red ground, gold initials PCFPCP in top left corner. Leading cities: Moscow (1936) 3,567,900 inhabitants, Leningrad (1935) 2,739,800, Gorky (formerly Nizhni-Novgorod) 512,600, Rostov on the Don 479,400, Sverdlovsk (formerly Ekaterinburg) 450,000, Stalingrad (formerly Tsaritsyn) 390,000, Saratov 340,000, Novo-Sibirsk (formerly Novo-Nikolaevsk) 310,000 inhabitants.

**Area and Population.**—Area, 16,499,000 sq.km. (about 78% of the whole Soviet Union), including the most varied natural zones; the tundra, the forest, steppe, and desert zones. Population (1937), 113.6 millions, of whom 73.4% are Russians, 7.8% Ukrainians, and 2.8% Tatars. There were, in 1936, 107,500 schools; and the total number of scholars (1936-37) was 17,658,000.

**History.**—After the adoption of the new All Union Constitution on Dec. 5, 1936, which aimed at the democratization of the State structure of the U.S.S.R., the R.S.F.S.R. at its 17th Extraordinary All Russian Soviet Congress in Moscow on Jan. 21 also adopted a correspondingly revised constitution. At present 17 autonomous republics, 6 autonomous territories, and 5 territories belong to the R.S.F.S.R. The number of other administrative units—the provinces—has been increased by several decrees to 27 in Sept. 1937. The R.S.F.S.R. took fourth place in the elections to the Supreme Council of the U.S.S.R. with a percentage of 96.8. In the autumn of 1937, a drastic purge of State and party took place. The war hitherto carried on against class enemies was now turned against the élite of the officialdom and the party who were suspected of counter-revolutionary activity and betrayal of the people. One of the first to be imprisoned in R.S.F.S.R. was the premier of the republic, D. Sulimov. A. I. Bubnov, for many years people's commissar for education was another member of the Lenin old guard to be deprived of his office for "incompetence and harmful work." In the individual autonomous republics attached to the R.S.F.S.R., such as Buryat-Mongolia, Karelia, and Chechen-Ingush A.S.S.R., many of the leading personalities have fallen victims to the drive against Trotskyists, wreckers, spies, etc.

**Trade and Communication.**—Agriculture.—Sown area (1936), 353,874 sq.mi.; 92.6% peasant households collectivized. Grain production (all kinds) is chiefly in the Black Earth region of Central European Russia, on the Central Volga, in North Caucasus, Don Territory, and West Siberia; sugar beets, potatoes, flax, fruit, and tobacco (Black sea) are produced. Cattle and dairy farming are practised.

Natural resources include iron ore, coal, oil, gold, platinum, copper, zinc, lead, peat, timber, furs, fish, water power.



Retail trade turnover (1936) 68.3 milliard roubles. Export articles: machines, chemicals, textiles, oil, metals, grain, sugar, potatoes, flax, vegetable oil, fruit, fish, cattle, dairy products, timber, matches, paper, furs, building materials, etc. Output of industry (1936, at prices 1926-27): 56,495 million roubles. Output of electricity: 21,419 million kilowatt-hours.

Main industries: coal and iron mining, gold-mining, oil industry, machine building, metallurgy, chemicals, timber, textiles, food, building. Length of railways (1936), 60,963km.; length of navigable rivers (1935), 69,453km. (S. YAK.)

**Rutherford, Ernest Rutherford,** 1ST BARON (1871-1937), O.M., F.R.S., British physicist; born at Nelson, New Zealand, August 30. He was president of the Royal Society, 1925-30; chairman of the Advisory Council of the Department of Scientific and Industrial Research, 1930-37; and director of the Royal Society Mond Laboratory, Cambridge, 1936-37. In 1931 he was raised to the peerage, taking the title of Baron Rutherford of Nelson and Cambridge. When, in 1933, German scientists and scholars began, for racial reasons, to lose their posts, Lord Rutherford was a founder and the first president of the Academic Assistance Council, since renamed the Society for the Protection of Science and Learning. Chief among his later publications was *Radiations from Radio-active Substances* (1930, with James Chadwick and C. D. Ellis). He died at Cambridge, Oct. 19, 1937. For details of his career see *Encyclopædia Britannica*, vol. 19, p. 773.

**Rye.** A short crop in Europe, owing chiefly to low yields in Poland and Germany, may result in the United States again becoming the leading rye exporting country, a position held usually by Poland since 1928 and at times before that by the United States. The estimated Polish crop this year is about 224,400,000bu., compared with 250,541,000 in 1936. In the United States the crop was 49,449,000bu. as against 25,319,000 in 1936, while in Canada the 1937 harvest was 4,276,000bu., compared with 3,042,000 the previous year. Annual consumption in the United States is about 34,000,000, leaving about 15,000,000bu. for export. About 7,500,000bu. for flour milling and about 11,500,000bu. for distilling are among the estimates for this year's crop usage in the United States. In Germany the 1937 rye harvest was 252,000,000, compared to 290,788,000bu. in 1936 and the government has forbidden the feeding of rye to livestock. The total harvest of 16 leading rye-growing countries in Europe was 685,368,000bu., which is 56,000,000bu. less than the small crop of 1936. Other production comparisons are Czechoslovakia, 56,549,000bu. in 1936 and 59,100,000 in 1937. Hungary, 28,114,000 in 1936 and 25,350,000 in 1937. Austria, 18,129,000 in 1936 and 17,700,000 in 1937. Netherlands, 19,059,000 in 1936 and 16,500,000 in 1937. Rumania, 17,842,000 in 1936 and 15,700,000 in 1937. Sweden, 13,891,000 in 1936 and 15,700,000 in 1937. Finland, 12,755,000 in 1936 and 14,960,000 in 1937. Bulgaria, 8,688,000 in 1936 and 9,800,000 in 1937. Estonia, 6,044,000 in 1936 and 8,110,000 in 1937. Portugal, 3,652,000 in 1936 and 4,650,000 in 1937. Greece, 1,919,000 in 1936 and 2,990,000 in 1937. (See also CEREALS.) (S. O. R.)

**Sahara, The:** see FRENCH WEST AFRICA AND THE SAHARA.  
**Sailing Ships:** see SHIPPING, MERCHANT MARINE: *Sailing Ships*.

## St. Helena and Ascension Island.

These two south Atlantic islands form a British crown colony. St. Helena lies in S. lat. 15°55' and W. long. 5°42', and Ascension

Island is 700mi. to the N.W. The governor and commander-in-chief is Henry Guy Pilling, C.M.G., and the capital is Jamestown in St. Helena.

**Area and Population.**—St. Helena has an area of 47 sq.mi., and a population of 3,995; Ascension Island is 34 sq.mi., in area, and has a population (1931 census) of 188. The chief towns are Jamestown (1,529), and George Town in Ascension Island.

**Trade, Communications, etc.**—There is monthly communication by Union Castle steamer. In 1936, 850 tons of fibre and 426 tons of tow were exported at £17 and £13 a ton respectively. Garden produce supplied to ships amounted to £578. Imports for 1936 were £1,388.

Revenue for 1936, including a Treasury grant of £23,198, was £3,748 in excess of estimates, owing chiefly to sales of coronation postage stamps. Expenditure was £19,569.

**St. Louis,** a city in the State of Missouri, covers an area of 61.3 sq.mi., with 856,000 persons living within its corporate limits; an additional 211,593 persons reside in St. Louis county, an area of 487 sq.mi., as well as 315,000 persons resident in Madison and St. Clair counties, Illinois, immediately across the Mississippi river, and a real part of the metropolitan district known as Greater St. Louis.

For years one of the largest industrial cities in the Middle West, ideally situated geographically, a hub of rail, air, highway and water transportation, St. Louis enjoyed in 1937 a healthy gain in building over the preceding year, especially of small homes; while the addition of the \$3,500,000 plant for the Crown Can Co., and purchase of 374 acres in St. Louis county by the Ford Motor Co. for one of the firm's largest assembly plants which will employ more than 4,000 workers, gave considerable impetus to the industrial boom.

It is in the fields of art, music, science, education and amusement that St. Louis made its most noteworthy strides during 1937. The City Art Museum acquired "Triptych of Virgin and Child," by Lorenzo di Nicolo Gerini, "The Two Sisters," by Henri Fantin-Latour, both oil paintings, and "The Prophecy of Nathan," a famed Brussels tapestry. Numerous rare specimens were acquired by St. Louis's "Zoo." In the field of science the Award of Chemical and Metallurgical Engineering went to the Monsanto Chemical Co., a St. Louis firm. Both of St. Louis' universities, Washington university and St. Louis university, added chairs in science and the arts to their curricula, while an additional new municipal high school, costing \$800,000, was completed.

Among the more important public buildings constructed during the year were the \$4,300,000 U.S. Post Office and the \$875,000 Municipal Soldiers' Memorial. At the same time the city completed a \$1,500,000 super-highway of the partial-subway type, connecting with main arterial highways leading to the city from all directions and greatly reducing hazards caused by traffic congestion. Long a great medical centre St. Louis dedicated the \$3,000,000 city-built and -owned Homer G. Phillips hospital, and started work on the Bliss Psychopathic Institute to be completed in 1939 at a cost of \$1,000,000. St. Louis presented in 1937 the annual Veiled Prophet Parade, one of the outstanding colourful pageants in the U.S., attracting more than 270,000 persons along the line of march to watch the floats and performers, while the huge Municipal Auditorium was packed to capacity by socialites honouring "His Majesty the Veiled Prophet" at the annual ball. The Municipal Opera, presenting a well-balanced repertoire in the sylvan theatre in beautiful Forest park during the summer months, attracted 774,985 persons from all parts of the world during its most successful season of 1937. The St. Louis Symphony Orchestra under the baton of Vladimir Golschmann, giving its fifty-eighth season of concerts, provided St. Louisans with the



best in music during the fall and winter months.

Among the more important legislative enactments was the passage of a new and stringent anti-smoke ordinance designed to free the city from unnecessary smoke and dirt, and the adoption of a new milk ordinance complying with the U.S. Public Health Standard. The St. Louis Bar Association launched a campaign to disbar unethical attorneys and establish the legal profession on a high plane.

(E. L. R.)

**St. Pierre and Miquelon,** a French colony comprising St. Pierre, Miquelon, and six smaller islands near Newfoundland. Language, French; capital, St. Pierre (pop. 3,396). The area is about 93 sq.mi.; the population by the latest census was 4,175 (1936), a decline of 158 since 1931. The colony is governed by an administrator and partially elected council. St. Pierre is a regular port of call for several British and French transatlantic lines. The colony enjoys excellent cable and radio communication. The sole industry is fishing, for which the islands are an important centre. The trade has, however, seriously declined in recent years, with consequent acute economic depression. Exports in 1936 totalled 38,679,000 francs, imports 13,683,000, against 51,351,000 and 27,995,000 francs respectively in 1935. From 1925 to 1933, the lowest total volume of external trade was 237,004,943 francs (1925), the highest 680,196,637 (1930). Imports, primarily wines, foodstuffs, and miscellaneous supplies for fishing vessels are supplied chiefly by Canada, the United States, and France. The decline is attributable to several factors: unsettled world trade, revaluation, and the loss of the formerly profitable liquor trade with the United States. Efforts begun in 1935 to better the colony's economic condition were continued in 1937, when provisions were made for loans to shipping interests, but a 2,000,000 franc deficit for 1937 was officially forecast. The monetary unit is the French franc (value: 3.4¢ U.S.), but United States, Canadian, and Newfoundland dollars circulate freely. Primary education is public, supplemented by two parochial secondary schools.

**Sakhalin,** a long, narrow island in the North Pacific, area 24,560 sq.mi., belonged to Russia until the Russo-Japanese War of 1904-05. Under the terms of the Peace of Portsmouth the island was divided into two approximately equal sections, the southern part being assigned to Japan, while Russia retained the northern. The 50th degree of latitude represents the boundary line. Japan occupied North Sakhalin during the period of civil war and foreign intervention in Russia. Soviet sovereignty was established in North Sakhalin in 1925 as part of the general agreement for the establishment of normal diplomatic relations between Japan and the Soviet Union. At the same time Japanese companies received long term concessions for the exploitation of oil and coal deposits in North Sakhalin. There have been frequent disputes about the interpretation of these concession agreements; but there has been no border friction, as along the Manchoukuo-Siberian frontier. North Sakhalin has been included in the general Soviet plans for an industrialized and self-sufficient Eastern Siberia and emigration to this remote outpost of the Soviet Republics has been encouraged. Japan has been equally energetic in developing its part of Sakhalin. The forests have, indeed, been too ruthlessly exploited; and destructive fires, encouraged by the dry summer climate, have depleted the timber stands which supply pulp for Japan's large paper industry. There are valuable fisheries of herring, trout, salmon, cod, shellfish and other marine products and the reserves of coal are estimated as high as 1,500,000,000 tons, although present annual output is only a little over 1,000,000 tons. The Mitsubishi Company is carrying on experiments in distilling oil from

coal at Naihoro, on the western coast of Sakhalin. Colonization from Japan Proper is encouraged, but with only moderate success. The population of the Japanese part of Sakhalin is about 336,000.

(W. H. CH.)

**Sales:** see RETAIL SALES.

**Sales Tax.** The general sales tax was introduced into the fiscal system of the various political subdivisions of the United States during the depression of the 1930's. Despite the stubborn resistance which met its introduction, it has gradually expanded, both in area and in the size of the income which it yields. It may fairly be said to have found a place in the American fiscal system which promises to be enduring. There are no less than 28 States that have some form of sales taxes; and the number of States having the modern type of sales tax has been increased by two during the year 1938. In States where the tax previously enacted expired during 1937, it was renewed, without exception.

Whatever hope there was for a marked reduction in the number of States and municipalities which impose this form of tax has been blasted for the present by the advent of the business recession which began in the latter part of 1937. The sales tax is ideally suited to raising revenue under emergency conditions. It was introduced into the United States during the economic catastrophes of 1932 and 1933, for the reason that the general property tax had broken down. The defect with that tax was that while it can be levied, its collection in times of depression is another matter. The sales tax solves that problem at a stroke. It makes one's income well-nigh useless unless he pays the tax. For the expenditure of income has, as a condition inseparable from the act of spending, the payment of the tax. There is no such thing as evading the sales tax. It is a safe prediction that we shall see a further expansion of the sales tax and an increase in its rates if the present business recession continues for any con-



Summers

"MISTER X," as Summers sees him in *The Cleveland News*



siderable length of time. One of the defects of the sales tax is that it is highly expansible. Since it must be paid as a condition to the expenditure of one's income, it is possible to impose high rates without greatly checking the volume of sales, and so the collection of taxes.

The one form of evasion which has been met in the administration of the tax in the United States takes the form of purchases outside the jurisdiction in which tax is levied. To meet this difficulty a number of the States have resorted to "use" taxes. Most of these are modelled upon the California tax, where, since July 1, 1935, a use tax of three per cent upon the "storage, use, or other consumption . . . of tangible personal property," has been imposed. Exempt from this tax are all goods subject to the retail sales tax and all goods specifically exempted from that tax. The tax, thus, is applicable only to goods purchased outside the State which would be subject to the retail sales tax if purchased within the State. The tax is levied upon the consumer, who must file quarterly returns showing amounts of property purchased and subject to the use tax.

A final and important defect of the sales tax is that it bears unjustly and with undue severity upon those who are least able to pay. It violates practically every principle of justice in taxation. This is true to such a degree that its employment can be vindicated only by the most dire necessities of fiscal and social emergencies. (See also TAXATION.) (D. F.)

**Salt.** Because of its domestic uses, the production of salt is one of the most widely disseminated of the mineral industries. Scarcely any country on the face of the earth, civilized or uncivilized, fails to contribute in some degree to a total output that was estimated at 31,000,000 metric tons in 1935. The United States leads in production, with 23% of the total, followed by the Soviet Union, 14%, the United Kingdom 9%, China 8%, Germany 8%, India 6%, France 6% and Italy 4%. These countries represent the more heavily industrialized areas, and those of greatest density of population, and contributed 78% of the world output. The extent to which industrial uses affect salt consumption is emphasized by a comparison of the United States and China, the per capita consumption of the United States being about 80 times that of China. (G. A. Ro.)

**Salvador, El,** a republic on the Pacific coast of Central America; language, Spanish; capital, San Salvador; president, General Maximiliano Hernández Martínez. The area is 13,176 square miles. The population according to the June 1937 census was 1,631,967, of whom 621,907 were urban residents. The leading cities with 1930 populations are: San Salvador, 96,447; Santa Ana, 75,860; San Miguel, 40,349; Nueva San Salvador, 30,447. The dominant note in El Salvador in 1937 was one of stringent economy. In February a trade reciprocity agreement with the United States was signed. In July, the government announced withdrawal from the League of Nations "for financial reasons" (effective in 1939).

In September the president-dictator stirred great enthusiasm when he formally enunciated the policy of never contracting a new loan. Salvadorean imports totalled 20,122,963 colones and exports 25,251,170 colones in 1936. In the fiscal year 1936-37 imports from the United States increased 63.3%, but exports rose only 7%. El Salvador has 604 kms. of railway. Coffee comprises 70-80% of the exports. The monetary unit is the colon (value: 40¢ U.S.). The 1936-37 budget was balanced at approximately 22,000,000 colones. The public debt in 1936 was 42,269,000 colones, a reduction of over 3,000,000. In 1935 there were 1,200 primary and 30 secondary schools, with total enrolment of 82,468, and one university.

**Salvation Army.** During 1937, at the 2,064 American centres of work, an evangelical and emergency relief program of extraordinary dimensions occupied the time and attention of Salvationists who found little diminution in the demands made upon them by sufferers from unemployment and kindred social ills. Ninety thousand converts were recorded by the organization during the year; 716,584 indoor meetings and 163,991 open-air gatherings were conducted; 4,631 officers and cadets direct the activities of the organization throughout the country. There are 35,919 local officers and bandsmen; of 2,128 inquiries received by the Missing Persons Bureau, 845 individuals were located.

An important phase of the organization's many-faceted program is its character-building activity, carried on through special departments which provide young people with suitable companionships, social programs, helpful class work, and meetings for their development.

The Salvation Army work in America is divided into 4 territories, Eastern, with territorial headquarters in New York, Central, with headquarters in Chicago, Southern, with headquarters in Atlanta, and Western, with headquarters in San Francisco. A commissioner is in charge of each of these territories, while a National headquarters in New York under a National secretary, serves to unify the work of the country.

**Great Britain.**—Claiming the world as its "parish," the Army now has centres and outposts in 95 countries and colonies and comprises 17,567 corps, for the staffing of which there are 26,877 officers and cadets, 116,048 local officers, 51,329 bandsmen, 82,100 songsters, 35,770 corps cadets, and nearly 10,000 persons without rank, wholly employed. It would not be possible to calculate the numbers who follow the banners.

During 1937 the leader of the Army, General Evangeline Booth (b. 1865), daughter of the first General, William Booth, visited India, where she took the Indian name "Prema" (meaning love and affection), Ceylon, and the Netherlands Indies. She was present at the coronation ceremony at Westminster Abbey, and among the guests at a reception at Buckingham Palace. For the observance of the 25th anniversary of the death of the founder, the general entertained 1,500 children and 500 mothers from the poorest parts of London.

In England, the plight of Spanish refugees brought some hundreds of Basque children under the care of the Army; whilst a new isolation block at the Mothers' Hospital, Clapton, London, was opened by Lady Baldwin.

In round figures, the self-denial effort in British territories produced in 1937 £156,000.

**Samoa** comprises American Samoa and the mandated territory of Western Samoa.

**American Samoa,** lying between 167° W. and 171° W. long., and between 5° S. and 7° S. lat., comprises the island of Tutuila (40 sq.mi.) and five other islands (total, 16 sq.mi.). Population (1937), 11,908. Seat of government, Pago Pago (Tutuila), a magnificent harbour, being a regular port of call for trans-Pacific mail ships, and a U.S. naval station.

**The Mandated Territory,** formerly a German possession, lies between 171° W. and 173° W. long., and between 6° S. and 7° S. lat. It comprises the islands of Savaii (703 sq.mi.) and of Upolu, with its small adjacent islands (430 sq.mi.). Population (1936): 610 Europeans, 2,453 half-castes, 502 Chinese, 51,131 Samoans, and 82 other islanders. The mandate is held by New Zealand, the acting administrator being A. C. Turnbull. Capital, Apia (Upolu). Revenue (1935-36), £111,867; expenditure, £100,736. Exports (1936), £263,255, chiefly copra, bananas, and cacao; imports, £167,020.



**Sand and Gravel.** The leading uses of sand and gravel are in building construction and road paving; these account for 80% of the sand and 90% of the gravel consumption of the United States; the only other important use of gravel is as railroad ballast, which takes all but 1% of the remainder, but with sand, ballast accounts for only 2%, and there are a number of industrial uses. The total production increased by about one-half in 1936, as compared with 1935, reaching 60,303,000 short tons of sand and 118,026,000 tons of gravel, against 33,161,000 tons and 74,595,000 tons in 1933, and 99,253,000 tons and 123,319,000 tons in 1929.

The combined output of sand and gravel in Canada declined from 28,548,000 short tons in 1930 to 11,739,000 tons in 1932, increased to 21,213,000 tons in 1935 and dropped to 19,847,000 tons in 1936. Production in the United Kingdom is less than in Canada, amounting to 15,611,000 long tons in 1935.

(G. A. Ro.)

**Sand Island:** *see* MIDWAY ISLANDS.

**San Francisco,** California, U.S., central port and financial centre of the Pacific coast, known as "The City by the Golden Gate"; area, 42 sq.mi.; population according to the U.S. census of 1930, 634,394, estimated Jan. 1, 1938, 739,746. Of the city's population, 235,298 were (1930) native whites of native parentage, or 37.1%; 206,285 native whites of foreign or mixed parentage, or 32.5%; 153,386 foreign born whites, or 24.2%; 39,425 Negroes or of other races, or 6.2%; 338,033 males and 296,361 females.

**History.**—The mayor in 1937 was Angelo B. Rossi, native Californian; legislation is vested in 11 supervisors functioning under a charter, which embodies fundamental rule for the only joint city-county in the State of California. Interest in civic affairs was evidenced by a vote of 176,200 out of a registration of 290,000 in the last municipal election. The judiciary consists of Superior and Municipal courts in which tenure is elective and for six years, and the city houses the State Supreme Court, despite the fact that the State capitol is at Sacramento.

The early part of 1937 witnessed conclusion of a 98-day strike of maritime workers that entailed actual monetary loss in excess of \$200,000,000 and ranging upward to twice that sum in commercial intangibles. The lesson prompted a group of 43 business men to seek, by amicable discussion, prevention of future strikes. As 1938 arrived, they had laid the groundwork, although still in nebulous form, in conjunction with labour representatives. In the meantime, the San Francisco Industrial Association aided in effecting peaceful settlement of four-fifths of the threatened strikes, and the city finished the year with a record of 36 actual work stoppages and consummation of 137 collective bargaining agreements.

**Education.**—There are 72 elementary and 21 high schools in the public system, and numerous parochial educational institutions, while the city is the home of the University of San Francisco, San Francisco Junior college, branches of the University of California and of Leland Stanford, Jr., university, located respectively across the bay at Berkeley, and 30mi. southward at Palo Alto.

**Commerce.**—Over the harbour's 50 piers passed 31,479,844 tons of commerce in 1937, including a goodly share of the State's total agricultural output of \$481,219,000. The last barrier to the city's peninsular isolation was eliminated during 1937 with completion and opening of the Golden Gate bridge, connecting with coastal counties northward and complementing the San Francisco-Oakland bay bridge, completed the year before to the neighbouring communities of the East bay section. Increase in traffic

because of the bridges intensified an already serious traffic control problem, not yet settled. Voters rejected a proffered solution in the form of a \$50,000,000 subway system, reflecting an uncertainty of general dimensions.

(C. H. Ro.)

**San Francisco-Oakland Bay Bridge:** *see* BRIDGES.

**San Gabriel No. 1 Dam:** *see* DAMS.

**Sanger, Margaret:** *see* BIRTH CONTROL: *Bermuda*.

**San Marino,** a tiny republic of 38 sq.mi. in the Apennines, S.W. of Rimini, entirely surrounded by Italian territory, ruled by a Grand Council and two regents appointed therefrom to exercise executive powers. Population (1932), 13,950; the capital (of the same name) has about 1,700 inhabitants. Building stone and wine are exported; there is an electric railway to Rimini. Italian currency is in use, but there is a local silver coinage.

**Santo Domingo:** *see* DOMINICAN REPUBLIC.

**"Sapper":** *see* MCNEILE, CYRIL.

**Sapphire:** *see* GEMS AND PRECIOUS STONES.

**Sarawak,** coastal strip on the north-west coast of Borneo (*q.v.*), an independent state, protected by Great Britain, ruled by Rajah Sir Charles Vyner Brooke (succeeded 1917). Area, *c.* 50,000 sq.mi.; population (est.) 450,000, of mixed races, Malay, Dyak, etc., largely Mohammedans. Some educational activities are carried on by mission schools. The capital is Kuching (pop. 25,000). Sago, rubber, and rice are grown; and coal and oil are worked in considerable quantities. There are numerous wireless stations, and regular steamer communication with Singapore; roads have been constructed in the Kuching neighbourhood. Revenue in 1936 was about £641,000 and expenditure £514,000, the former being raised mainly from customs, oil and timber royalties, lands, and an opium monopoly. The exports and imports for the same year were valued at £2,865,000 and £2,131,000 respectively. A police force of about 900 is officered by Britishers.

**Saskatchewan,** the middle of three Prairie Provinces of Canada, was created a Province, Sept. 1, 1905. It has a total area of 251,700sq.mi.; population, 931,000 (1936 estimate). The present Liberal Government, William J. Patterson, Premier, holds 50 out of the 55 seats. The opposition party is Farmer-Labour.

Widespread drought extending from the south border to north of Saskatoon characterized the year. The total farm value of field crops for 1937 was estimated at \$47,404,000 by the Dominion Department of Agriculture, as compared with \$148,233,400 in 1936. There is practically no other source of income. As a result, not less than 400,000 persons are on direct relief. The Dominion Government has come to the assistance of the Provincial Government, in some areas bearing the total cost of relief, in others a part. Lack of fodder for livestock has necessitated the shipping out of cattle and horses. Only sufficient livestock may be retained for family maintenance. The Dominion Government has enlarged its program under the Prairie Farm Rehabilitation Act in an attempt to prevent the recurrence of drought over such wide areas.

(J. T. C.)

**Saudi Arabia:** *see* ARABIA.

**Savage, Michael Joseph** (1872— ), New Zealand statesman; son of Richard Savage, farmer at Benalla, Australia, where he was born on



March 7, 1872, and educated at the State school there. Beginning life as an employee in a general store, he worked from 1893 on an irrigation scheme in New South Wales, and from 1900 as a miner in Victoria, afterwards becoming manager of the Rutherglen Co-operative Company. He arrived in New Zealand in 1907, started work in a flax mill, and soon became active in the labour movement. After twice standing at parliamentary elections, he was returned for Auckland West in 1919, retaining that seat with increasing majorities in 1925, 1928, 1931, and 1935. He became national secretary of the N.Z. Labour party, its deputy leader (1922), and its leader (1933). On Dec. 5, 1935, after the general election, he was appointed first labour prime minister of the Dominion, holding also the portfolios of external and native affairs, with charge of some minor departments. In 1936 he was made a privy councillor. In 1937 Mr. Savage visited London to represent the Dominion at the Coronation and in the same capacity attended the Imperial Conference (May 14—June 15).

**Savings Banks.** In Europe as well as in the United States there has been, in general, a growth in the volume of savings bank deposits and in the number of depositors during that portion of the year 1937 for which statistics are available.

Assets of the 551 Mutual Savings Banks in the United States increased \$128,700,000 to a total of \$11,588,000,000 during the six months ending July 1, 1937. Deposits credited to 14,759,246 accounts reached a peak of \$10,207,000,000 and the combined surplus was \$1,323,000,000 or 13.5% of total deposits. Dividends averaged 2½% during the year, a slight decrease from the rates prevailing in 1936.

In Great Britain's 650 Trustee Savings Banks offices on Oct. 31, 1937 there were 3,500,000 accounts with total funds of £270,000,000. This sum represents the combined assets of all three departments: Ordinary, Special Investment and Government Stock Register. Thirty-six new branch offices were opened during the year, the largest expansion of new offices in the 120 years of the Trustee Savings Banks' history. The interest rate on Ordinary accounts continued at 2½%, and deposits in this department increased more than £11,000,000. In Great Britain's Post Office Savings Banks credits to depositors exceed £632,000,000 with 10,600,000 active accounts. In the United States, as well as Great Britain, the increase in the volume and number of savings accounts was stimulated by the general improvement in economic conditions.

In America, mortgage loans, the customary major outlet for savings funds, were available only in small quantities, because of continued sluggishness in the building industry. Foreclosures of mortgages have abated and a general improvement was noted in the status of existing mortgage investments. Purchases of U.S. government securities continued as the principal investment of current funds. In Great Britain no investments are made by Trustee Savings Banks in mortgages but the Special Investment departments lend considerable sums to the local authorities for municipal improvements. The amount of such loans outstanding is £85,000,000. In both English-speaking countries the savings institutions continue to develop school savings, safe deposit departments, and other savings facilities by educational activities and an increasing use of advertising including the radio, especially in the United States.

On the Continent and especially in Scandinavia, 1937 marked a visible improvement in savings bank activities. Growth was recorded in Germany and in Italy, and with an interruption due to the absorption of a large government loan, and adjustments following revaluation of the currency, also in France. Progress was made in tightening of savings bank regulation by public authori-

ties and in fostering the special training of savings bank employees. In Denmark a new savings bank law came into effect on July 18th.

(HE. BR.)

**Scandinavian Literature.** Among the poets in Norway who must be mentioned are Hovden with *Dikt i utval*, Schøyen with *Viddenes folk*, Vogt with *Et liv i dikt*, Wildenvey with *Samlede dikt*, and Øverland with *Den røde front*. Published plays included Krog's *Opbrudd*, Tu's *Seinsumar*, Borgen's *Høit var du elsket*, Egge's *Manns ære*, and Grieg's *Nederlaget*.

The *Norsk litteratur historie*, begun in 1924 by Bull, Paasche, and Winsnes, was completed in 1937 by the appearance of Vol. V.

Among the numerous novels, the most vital were, perhaps, Elster's *Helg*, Hagen's *Refsing*, *Den gamle pionér*, Scott's *Ferdinand*, Sigrid Undset's *Norske helgener*, Anker's *Små avsløringer*, Braaten's *Fugleburet*, and Fangen's *Allerede nu*.

**Sweden.**—There was some rather striking poetry. Lagerkvist produced *Genius*, a visionary prophetic book. Gullberg's *Att Övervinna Världen* raised him to the front rank. Siwertz's *Minnas*, Berit Spong's *Dam med Parasoll*, K. G. Hildebrand's *Var-dagsjämning*, and O. Lagercrantz's *Den Enda Sommaren* are all works of note. Successful memoirs included H. Hamman's *Minnen*, V. Heiser's *En Amerikansk Lakares Odyssé*. A few travel and adventure books rose above the average, namely, C. Belfrage's *Bort Från Alltihip* and A. Engström's *Med Kaaparen Till Sydafrika*. Outstanding successes among novels were Gustaf-Janson's *Stora Famsnen*, Hammenhög's *Anna Sevardt*, Hedberg's *Grop åt Andre*, and Swensson's *Hjalmar Willen och hans Klass*.

**Denmark.**—Poetry suffered a great loss in the death of the poet Thøger Larsen, but several important collections appeared, in particular K. Andersen's *Lanterner*, Marie Bregendahl's *Filtret Høst*, and J. V. Jensen's *Paarskebadet*. Noteworthy novels were K. Bjarnhoff's *Livets Elskere*, K. Blixen's *Den afrikanske Farm*, and J. Buchholtz's *God lille By*.

Historical works included Vilh. La Cour's *Danmarks Historie*, G. Hatt's *Landbrug i Danmarks Oldtid*, and Th. Thaulow's *Kong Christian og det danske Folk*, 1912–1937. The most important biographies were perhaps M. Nexø Andersen's *For Lud og Koldt Vand*, J. Kammergaard and N. Anesen's *Svømmeturen*, and J. E. Lang's study of *Henry George*.

(X.)

**Iceland.**—Among the volumes of poetry were J. Úr Vör's *Ég Ber Að Dyrum*, J. Úr Kötlum's *Hrímhvíta Móðir*, and G. Frímann's *Störin Syngur*. Books of essays included: G. Finnbogason's *Mannfagnaður*, and a collection of essays and short stories by various authors, entitled *Rauðir Pennar*. Among the novels were Laxness's *Ljós Heimsins*, two by K. Guðmundsson, *Uxinn Og Gyðjan* and *Lampinn*, and H. Halldósson's *Hraun Og Malbik*.

(S. L. EN.)

**Schacht, Hjalmar Horace Greeley** (1877– ), German economist, personal financial adviser to the Führer, president of the Reichsbank and minister of economic affairs from July 1934 till November 1937, when he voluntarily resigned (the first Nazi minister to do so), and was made a Reich minister without Portfolio; born in Schleswig, he was educated in Germany, obtained his doctorate in Berlin, entered a banking house, and by 1916 was director of the Darmstaedter and National bank. On the collapse of the mark (1923), he devised the "Rentenmark," thereby stabilizing the currency, and in 1924 became president of the newly-formed Reichsbank.

An opponent of autarchy, or self-sufficiency, Dr. Schacht, in April 1937, declared that Germany wished to buy cheaply abroad rather than manufacture expensively at home; in May at Paris,



after opening the German pavilion at the exhibition, he asked that, in return for a firm guarantee of European peace, a return to a reformed League, and an open discussion on armaments, Germany should be allowed an outlet for colonial activity; but in August he ceased to take part in the work of his ministry, and on November 26 resigned, as he did not entirely agree with General Göring's four-year plan, though he was prepared to carry out Hitler's economic policy.

**Schizophrenia:** *see* INSANITY; MEDICINE.

**School of the Air:** *see* BROADCASTING.

**Schuschnigg, Kurt von** (1897— ), Austrian statesman, born at Riva in what was then "Italia Irredenta"; served in the World War, and was made prisoner by the Italians in 1917. He entered politics in 1927, and in 1932 was minister successively of education and of justice under the Dollfuss régime, and founded the Sturmscharen, a militant organization of Catholic youth. In 1934, he became chancellor of Austria, consolidating his position two years later by dispensing with his vice-chancellor, Prince Starhemberg. In March, 1937 Dr. von Schuschnigg assumed the portfolio of public security, after dismissing Herr von Sturmer, the previous minister. On April 23, he met Mussolini at Venice to discuss political and economic co-operation between his country and Italy. On Oct. 8, in an important speech at Vienna, he summarized the policy of his régime, and appealed to Germany for the suppression of propaganda by Austrian émigrés. An international crisis developed when Chancellor Schuschnigg conferred with Adolf Hitler on Feb. 12, 1938 and on February 15 announced the appointment of a cabinet partly pro-Nazi and the freeing of all political prisoners. Austria's capitulation to Hitler's demands marked a triumph for the policy of German expansion in central Europe.

**Science Museums.** The Buffalo Museum of Science opened a 16-week course in museum training. Mr. Philip Fox was elected director of the Museum of Science and Industry, Chicago. Professor Allen, of Cornell university constructed two nature groups of birds which sing and go through natural life-like movements by means of sound films and electrically driven mechanisms. Mr. Frank Tose, in charge of the exhibits at the California Academy of Sciences, San Francisco, was selected to represent the Carnegie Corporation of New York in a trip to Australia and New Zealand to introduce the latest methods of preparation of natural history habitat groups in public museums.

**Great Britain.**—At the Science Museum, London, an important temporary exhibition on television was held. The exhibition showed the development of television since the discovery of selenium in 1817 and the present state of progress. Other temporary exhibitions were of electric illumination and timber. A marine screw-propulsion centenary exhibition showed pioneer experimental work, subsequent development and present practice. The centenary of the London and Birmingham and Grand Trunk railways formed the occasion for a railway exhibition.

The Albany Museum at Grahamstown, South Africa, built a new wing of two rooms, to contain marine collections, history, and prehistory sections. Mr. Matthews retired from the Australian Museum, and Mr. McCarthy, assistant in anthropology, visited the Dutch East Indies and Malay States, to study prehistory and to take part in excavations at the island of Celebes, under Professor van Steen Callenfels. The director of the commercial and industrial museum of Montreal, Dr. Henry Laureys, published a booklet on the museum collections, including the recently estab-

lished permanent exhibition of British Empire products.

**Europe.**—The Brussels Museum acquired unique specimens of the Wealden dinosaur iguanodon, and installed them in two airtight cases. The bones were specially treated and mounted on iron frames. The Moscow Palaeontological Museum was moved to Moscow from Leningrad and opened for the International Geological Congress in July 1937. A museum recently founded at Lennep, Prussia, the birthplace of Wilhelm Conrad Röntgen, illustrates the significance of X-rays and the development of Röntgen technique. The German Röntgen Society founded a Röntgen Institute at Munich, containing a museum and library. The German Museum at Munich opened a new public hall and library. The museum of the Conservatoire National des Arts et Métiers, Paris, acquired a model of the engine Pacific Compound 1922-33; a graphorama, invented in 1892 by M. le Baron; a Caruelle piston pump; a Daubron centrifuge pump, and a bicycle of 1886. (V. R.)

**Scotland,** northern portion of the mainland of Great Britain, with many adjacent smaller islands; governed as an integral part of the United Kingdom, being represented in the British Parliament by 16 representative peers and 74 members in the Commons. Capital, Edinburgh.

**Area and Population.**—Area: 30,406 square miles. Population: (census 1931) 4,842,554; (estimated 1936) 4,966,000 (density, 159 per square mile).

**Religion.**—The (Presbyterian) Established Church of Scotland, with 1,288,500 communicants, is that of the majority. There are some 610,000 Roman Catholics, and about 127,000 members of the (Protestant) Episcopal Church.

**Language.**—English, save for 0.15% of the population (census 1931) who speak Gaelic only; 2.69% speak both languages.

**Educational System.**—(*See* GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF.) There are four universities, at St. Andrews, Edinburgh, Aberdeen, and Glasgow, with about 650 full-time professors, lecturers, etc., and 13,700 students.

**Leading Cities.**—The largest (and second largest in the British Empire) is Glasgow, population (1931) 1,088,417, followed by Edinburgh (438,998), Dundee (175,583), and Aberdeen (167,259).

**History.**—King George VI held court at Holyrood-house, Edinburgh, in July. In October a committee (chairman, Sir John Gilmour) reported recommending a reorganization of the executive administration into four co-equal departments of health, education, agriculture, and home affairs, to operate as far as possible from Edinburgh, under the secretary of State. Two by-elections in Glasgow (at Hillhead and Springburn) left party representation unchanged, being won by a Conservative and a labour supporter respectively, and the death in November of Mr. Ramsay MacDonald (*q.v.*) created a vacancy in the Scottish universities division which, at the end of year, had not been filled. A committee on the Scottish marriage laws under Lord Morison reported in January, recommending the abolition of all irregular ("Gretna Green") marriages and the introduction of a new and simplified form of civil marriage. In April the Duke of Gloucester laid the first stone of new Government buildings at Calton Hill, Edinburgh. Elaborate preparations were pushed forward for the Empire Exhibition to be held in Bellahouston park, Glasgow, in 1938.

**Scotland Yard:** *see* POLICE.

**Scottsboro Case,** in which nine Alabama Negroes were originally sentenced to death on charges of rape, entered its sixth year in the courts under somewhat more



favourable circumstances than had formerly prevailed. A changing attitude among the thoughtful white element was reflected in the altered tone of editorials in the State, notably one which appeared in the *Montgomery Advertiser* and was reprinted with approval by other journals. Increasing support developed for proposals of a compromise settlement. And some sort of agreement seems to have been reached between the prosecution and the defense attorneys though its terms were in the end differently interpreted by the opposing sides.

The year's chronology of formal events began on May 27 when the local defense attorney, Clarence L. Watts, petitioned the State Supreme Court to set aside Heywood Patterson's 75 year sentence and order a new trial. On June 14 this petition was denied. A further petition was later made to the Supreme Court of the United States; but it too, on Oct. 26, was denied—Justice Black taking no part in the decision. Meanwhile the new trials previously ordered for the remaining eight men began on July 12 with Clarence Norris, who four days later was again sentenced to the electric chair. Execution of this sentence, subsequently set for Sept. 24, was automatically stayed by the filing of notice of appeal. The State dropped the death plea against Andy Wright, and on July 21 he was accordingly convicted and sentenced to 99 years in prison. Charlie Weems, next in order, received a sentence of 75 years. Then on July 25 the attorney general nolle prossed the main indictments against the remaining five (Eugene Williams, Roy Wright, Olen Montgomery, Willie Robeson, and Ozie Powell). But Powell pled guilty to a secondary charge of assault on a deputy sheriff and was sentenced to 20 years in prison. Motions for new trials for Norris, Wright, and Weems were denied on Aug. 28 by the trial judge.

**Sculpture.** Federal sponsorship of sculpture projects and plans for the extensive use of sculpture in connection with the 1939 New York World's Fair were prominent aids in the promotion of sculptural activity in the United States during the year 1937. The value of the former was felt in numerous localities where sculptors were assisted in the continuance of their professions through government subsidy and special assignments for works for public buildings. The World's Fair program spurred activity by enlisting the services of a number of artists prominent in the sculpture field.

**The Federal Project.**—Most noteworthy of the Federal achievements was the completion of a varied group of sculptures for the new United States Post Office building in Washington through assignments and competitions given by the Procurement division of the Treasury Department, Section of Painting and Sculpture. Two of the major details were large size statues in marble designed for the reception room of the postmaster general's office—one of Benjamin Franklin, to commemorate his services as pioneer head of the postal system in the American colonies, the other of Samuel Osgood, first postmaster general of the United States. The Franklin statue was made by William Zorach, and that of Osgood by Paul Manship.

The Federal project called for other sculptural details, including 12 smaller statues in aluminum for the same setting. Statues of postmen of different periods in the nation's history were produced by as many artists assigned for the work following a competition in which many sculptors participated. Another important development was the completion of major sculptural work for the new National Archives building. This was chiefly in the hands of three prominent sculptors. Robert Aitken completed two large allegorical figures for the sides of the Pennsylvania avenue entrance, symbolizing "The Past" and "The Present." The pediments were treated by Adolph A. Weinman and by James Earle Fraser.



"THE BRIDE," a terra cotta by Alexander Archipenko, Seattle, Washington, Museum

While sculptors continued to win recognition for their talents with independent creative work, much of which was presented in exhibitions, others found their chief rewards in public monuments and memorials. Royal Cortissoz, art critic, commended as "extraordinarily life-like and convincing" an impressive frieze of 68 portraits by Mr. Aitken of the world's great painters, sculptors, and architects; this frieze was erected in two 50ft. panels at either side of the main entrance of the Columbus (Ohio) Gallery of Fine Arts. It was begun in 1930, brought to completion in 1937, and is known as the Frederick W. Schumacher Frieze, from the name of the donor whose gifts made possible the erection of the gallery.

The principal addition to sculptural monuments on Fifth avenue, New York, was the gigantic stylized figure of Atlas bearing a massive armillary sphere, designed by Lee Lawrie, and installed at the entrance to the International building at Rockefeller Center. In the field of memorial sculpture, a notable achievement was the completion of a heroic equestrian statue of General Anthony Wayne, a hero of the American War of Independence, by John Gregory. This was erected during the year





Paulanship's STATUE OF SAMUEL OSGOOD, first U.S. Postmaster General, in the Post Office Department building, Washington, D.C.



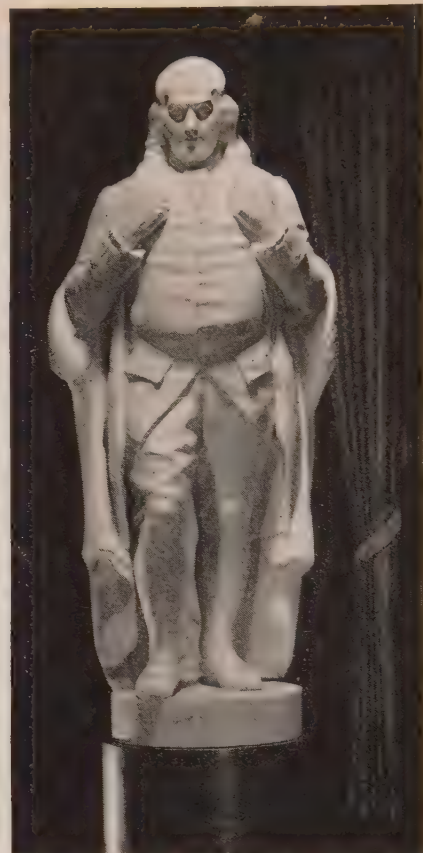
COURTYARD SCULPTURE at Jane Addams Federal housing project, Chicago, by Edgar Miller



DECORATIVE GROUP by Edgar Miller at the Jane Addams Federal housing project in Chicago



TWO UNUSUAL PIECES in the courtyard of the Jane Addams Federal housing project, Chicago



Marble statue of BENJAMIN FRANKLIN, first Colonial postmaster, in the Post Office Department building, Washington, D.C., by William Zorach

in front of the Pennsylvania Museum of Art in Philadelphia. Workmen on the Mount Rushmore Memorial near Rapid City, S.D., continued to further the ambitious project there, which was begun several years ago, and is to present in bold relief the heads of Washington, Jefferson, Lincoln, and Theodore Roosevelt.

**New York World's Fair.**—Provision for the extensive use of decorative sculpture at the New York World's Fair gave a marked stimulus to the profession, and a number of important commissions were given. The program called for four 15ft. groups interpreting "Night" and "Day" and a 50ft. sundial symbolizing "Time" for the Fair's central Mall, by Paulanship, and a monumental 50ft. figure of George Washington by James Earle Fraser, as well as other allegorical groups. Much of the work was approved in sketch form before the close of the year, ready for enlargement by a host of assistant sculptors. Among the works completed was a 27ft. panel setting forth the Fair theme, "Vision of the Future," designed by Albert Stewart.

Memorable sculpture exhibitions added to the knowledge of early as well as contemporary sculptors. A large display of the work of William Rush, America's first sculptor of note, was held at the Pennsylvania Museum of Art. This consisted of carved allegorical figures and portrait busts collected from many sources in and around Philadelphia, and was valuable in bringing together his work for the first time. A memorial show of drawings and sculpture by Gaston Lachaise at the Whitney Museum of American Art extended further the public's appreciation of this artist's strongly individualized creative gifts. Another notable show was Malvina Hoffman's exhibition at the Virginia Museum of Fine Arts in Richmond, which introduced her work to the South, showing many of her portraits of racial types from the series in

the Hall of Man at the Field Museum in Chicago.

The year recorded progress through widespread accomplishments in sculpture, and saw an increased response of public interest through the activities of the Federal-sponsored regional projects in many localities.

(C. BU.)

**S.E.C.:** see PUBLIC UTILITIES.

**Secondary Education.** During the year 1937, and the period immediately preceding, secondary education reflected the changing conditions, fortunes, and philosophies of the nations of the world. In the capitalistic democracies it responded to the recovery of business and the improvement of economic circumstances; under the dictatorships it became ever more closely and effectually harnessed to the purposes of the state. But whereas under fascism formal secondary education languished, in the Soviet Union it advanced with rapid strides toward the distant but proclaimed goal of enrolling the entire adolescent population. In the war-torn countries of China and Spain it felt the full impact of military conflict, numbers of schools in the path of battle being destroyed and the remainder being affected in their work by the physical and moral concomitants of the struggle.

In the United States, far removed from the strains and fears of the Old World, secondary education, for the most part, proceeded along lines already well established. The public high school, having become the dominant institution of secondary education before the opening of the present century and representing in its origins a repudiation of the selective principle of European tradition, continued on the road toward a complete democratiza-



tion of its program. Its enrolment increased at approximately the expected rate, its articulation with the elementary school became closer, and the curriculum was adjusted more adequately to the greatly varying abilities, interests, and futures of its pupil population.

At the beginning of the school term in Sept. 1937, the U.S. Office of Education estimated the enrolment of the four-year high school at 6,500,000 boys and girls. This means that the phenomenal growth of secondary education since 1890, recorded in the virtual doubling of enrolments every ten years, was continued even in the period of depression. In 1937 the high school enrolled approximately 1,735,000 more students than in 1929-30. These figures also mean that about 65% of the total population aged 14-18 years are attending school. Wide differences among the States are, of course, still evident. Thus the above percentage ranges from close to 28.0% in Alabama and 33.5% in Arkansas to 90.8% in Washington and 95.6% in Utah. Since the country is tending rapidly toward a stationary population and since in a few States and in many localities almost all children of appropriate age are in high school, the rate of growth of this institution may be expected to decline in the years ahead. In fact such a decline is already discernible.

The problem of meeting the diverse needs of this vast adolescent population, recruited increasingly from all social strata and all levels of native endowment, continued to occupy the centre of attention throughout the year. This fact is clearly revealed by the report of the committee on orientation of the powerful and representative department of secondary-school principals. Under the chairmanship of Professor Thomas H. Briggs of Teachers College, Columbia University, this committee, after working for three years, issued its report in 1936. Among its major conclusions and recommendations, which formed the basis of widespread discussion in 1937, the following are worthy of mention: that a comprehensive program of secondary education, open to all normal individuals, be maintained at public expense; that a new educational agency be established to provide supervision and appropriate activities for young people whose needs are not met by existing institutions; that secondary schools assume the same responsibilities for the acquisition of desirable attitudes and ideals as for the mastery of organized knowledge; that secondary schools be freed from the traditional domination of colleges and universities and be permitted to devote their energies to the central task of meeting the needs of all pupils; that the curriculum be organized as far as possible in terms of the life activities in which pupils will engage; and that all youth be served through a curriculum differentiated in accordance with their needs and capacities. The report of this committee shows the general trend in responsible and even conservative thought in the field of American secondary education.

Perhaps the most significant fact regarding secondary education in the United States during the past several years has been the emergence of a "youth problem" of unprecedented proportions. The depression created a condition of economic instability which bears with particular severity upon young people in the years of late and post-adolescence. Approximately one-third of all unemployed persons are to be found in the 8-year age span from 16 to 24. Moreover, 40% of employable youth have been unable to find work. To meet this situation government has undertaken such special measures as the National Youth Administration and the Civilian Conservation Corps camps. Under the auspices of the American Council on Education the American Youth Commission, generously financed from private sources, has been organized to make a thorough and comprehensive study of the entire problem. The first reports of this Commission, appearing in 1937, suggest that the burden of caring for unemployed youth will

be placed increasingly upon the secondary schools of the nation. But whether these institutions assume this responsibility or not, the present social and economic maladjustment of youth will have a profound influence upon American secondary education. Such influence is already apparent. (*See EDUCATION.*) (G. S. Cs.)

**Great Britain.**—Existing secondary schools range from the maintained schools provided by the local authority, through the aided schools, to the independent and public schools. The distinction is largely one of finance and control. Some schools are controlled locally under the general oversight of the Board of Education; other schools—mainly the old endowed schools—have independent governing bodies, the work of which is again lightly controlled by the Board of Education; whilst other schools—generally boarding schools—are quite independent of public control. All these schools are co-partners in the great task of secondary education.

Most of the maintained schools take a high proportion of special place scholars, *i.e.* the entry is competitive and the fee depends on a means test applied to the parents.

There are one or two recent advances towards freedom which should be recorded. Modifications of the School Certificate Examination are being made which will largely free the schools from the incubus of matriculation. This is a great step forward. It enables the school to adjust the curriculum according to the interest and ability of the pupils rather than force them through the five-line groove which has been considered essential for the prospective undergraduate.

Again, Sixth Form work has been controlled by means of advanced courses, and grants were paid for such courses as satisfied the Board of Education. The restriction of courses and subjects has been removed, and schools may now arrange a perfectly free Sixth Form curriculum. Their freedom is limited still, however, by the requirements of University Scholarship Examinations.

Other changes can be summarized briefly. Physical training is receiving more and more recognition in the schools and the cinematograph and broadcasting are being tested to see what contribution they can make towards the educative processes. There has also been a general lightening of home-work, in the hope that more time will be given to leisure pursuits and hobbies. Lastly, secondary teachers themselves are taking a greater interest in professional training. Attempts are being made to evolve a system which will not only prepare teachers for secondary schools, but keep them in touch with the University Training Departments for the first years of their active teaching life. (T. TH.)

**Seeing Eye,** the corporate society that educates dogs to be the trusted guides and friends of blind men and women, has had in 1937 the most successful year since its inception in 1928 when Mr. Morris Frank brought his German shepherd, "Buddy," from Mrs. Harrison Eustis's kennels in Switzerland. Bred for "character" and trained by Mrs. Eustis and Mr. Elliott S. Humphrey, the geneticist, "Buddy" is the dog that proved Seeing Eye dogs could safely guide blind people through heavy American street traffic; and it is primarily due to her that in this year of 1937 one hundred dogs graduated from the Seeing Eye at Morristown, N.J., and led their one hundred blind owners from darkness and dependence into light and liberty.

Seeing Eye dogs are now working in forty of the forty-eight United States. Sixteen of them are "attending college" as pilots to student masters; others are engaged as guides in such diversified occupations as the law, the ministry, journalism, politics, music, and a great variety of mercantile pursuits, including the raising of poultry. In addition to the actual dogs produced this year for those blind persons capable of benefiting from a dog—for unhappily all blind men and women cannot be permitted to



hope for this liberation—the Seeing Eye has made notable progress in informing a sympathetic public not only of the Seeing Eye's need for financial support (each dog costs approximately \$900 of which the blind purchaser is asked to pay only \$150) but also of the truth about blindness.

An ancient and truly blind tradition has encouraged the pitying notion that blind people are not normal individuals but a helpless group of the afflicted. In breaking down this hampering attitude of mind the Seeing Eye graduates themselves—both the human and canine ones—are the chief missionaries. They are everywhere proving that a blind person with a Seeing Eye dog is not merely an amazing prodigy but is an ordinary member of society, somebody who is “like anybody else.” (B. TA.)

**Seismology** has continued to advance during the year though there have been no great earthquakes to spur interest. In fact, the low activity renders it unnecessary to list any of the earthquakes. Co-ordinated effort in many lands has made effective progress possible. The trend of development has been toward more complete information rather than toward spectacular discoveries. From the viewpoint of investigation of the earth's interior and crust, studies have included: improvement of tables of travel time of earthquake waves; discovery and listing of new phases; variation of travel time with direction of travel of the waves; and deep-focus earthquakes. Through seismic methods using explosions as source of waves, conditions beneath the sea have been studied and possibility of extension to great ocean depths has been indicated.

Strong earthquake motions have been measured and analyzed, the results tested for accuracy and application has been made to structural design. In regions of great structures, such as dams and bridges, special provision has been made for locating earthquakes and recording their destructive motions. In this connection, natural vibration periods of structures and of the ground have been measured. Little progress has been made in determining ultimate earthquake cause but light has been thrown on conditions within the crust by laboratory tests of crustal materials under high temperature and pressure. Though general earthquake prediction is regarded as impossible, attention has been given to the possibility of determining whether stress is growing in the crust which may lead to earthquake, by means of triangulation, levelling, tilt measurement, and special measurements along great fault planes. In Japan an effort has been made to relate chronic or long-continued slow tilt with acute tilt which occurs before earthquakes.

Information regarding earthquakes has been made more complete through additional instruments and through better systems of securing reports from individual observers. Conditions are still unsatisfactory, however, for much of the earth. Immediate location of important earthquakes has stimulated interest. The strongest attack on the problems has been made in Japan and the United States, covering both the scientific and practical sides of the problem.

In Europe special attention is given to scientific problems, though some work on practical applications is being done in Germany and Italy.

Under international auspices the preliminary list of earthquakes for the earth as a whole is published in France and the final list in Great Britain. An excellent bibliography is prepared by Canada. (N. H. H.)

**Senate:** see CONGRESS, UNITED STATES.

**Senegal:** see FRENCH WEST AFRICA AND THE SAHARA.

**Separation of Isotopes of the Lighter Elements:** see ISOTOPES OF THE LIGHTER ELEMENTS, SEPARATION OF.

**Serbia:** see YUGOSLAVIA.

**Serum Therapy.** The use of antitoxins, serums and vaccines for the prophylaxis and treatment of disease steadily advances. Such agents are employed in anthrax, bacillary dysentery, brucellosis, cholera, diphtheria, erysipelas, meningococcic meningitis, plague, pneumonia of certain types, rabies, scarlet fever, tetanus and typhoid and less commonly in tularaemia and botulism. Recent advances include the use of serum in the treatment of Types V, VII, VIII and XIV pneumonia with results which have been at least equal to those obtained in Types I and II pneumonia. Favourable effects have been obtained in the treatment of Types I, II, VII and VIII pneumonia by the use of an unconcentrated rabbit serum. Employed intravenously in smaller amounts these serums appear to be more effective than the older concentrated horse serums. Pertussis vaccines are being used routinely in Denmark for the prevention of whooping-cough with the hope of controlling the disease to the extent that smallpox, diphtheria, etc., are controlled, but experience in the United States does not suggest that there is any satisfactory agent for the prevention of whooping-cough. One-ninth of the subcutaneous dose of typhoid vaccine has been given intracutaneously and appeared to be equally effective when tested at the end of one year. There is still no satisfactory vaccine for the treatment of the “common cold,” influenza or chickenpox. The prophylaxis of the virus diseases smallpox and rabies has long been established, but no suitable immunization against poliomyelitis has been developed, although the experimental work has been extensive. Diphtheria and tetanus toxoids have been administered simultaneously by the French with good results. In Denmark injections of diphtheria toxoid are being supplemented and augmented with nasal instillations of the product for the purpose of re-enforcing and later for re-establishing the immunity which is produced by the injected toxoid. (P. S. B.)

**Sewage Disposal:** see PUBLIC HEALTH ENGINEERING: *Sewage Treatment*.

**Seychelles.** A British crown colony in the Indian ocean, consisting of 92 islands between 4° and 10° S. lat., and 46° and 57° E. long. The governor and commander-in-chief is Sir A. F. Grimble, K.C.M.G.; and the capital is Victoria, in Mahé.

The aggregate area is c. 156 sq.mi., of which Mahé accounts for 55 sq.mi.; and the total population is 29,803 (Mahé 25,367). There are no railways or telephones. There is a mail steamer once a week, and air mails arrive via Karachi and Nairobi. The principal products, with 1935 production figures, are coco-nuts (47,000 tons) and copra (4,311½ tons); 57,130 kilos of cinnamon, valued at Rs.189,929, were also produced. Exports for 1935 amounted to Rs.996,169, and imports to Rs.891,350.

The currency is the Indian silver rupee. There is an income tax and a rural house tax. Revenue and expenditure for 1935 were Rs.728,173 and Rs.675,058 respectively.

**Share-the-Wealth Program.** In Aug. 1934, Upton Sinclair, author of many crusading books, won the Democratic nomination for governor of California. His program, known as E.P.I.C. or End Poverty in California, divided the voters into two classes, 10% of the comparatively rich who would lose by the policy and 90% who would gain. The program was to be carried out by certain agencies: C.A.L. (California Authority for Land) which would take over farms, particularly when notified for sale owing to tax arrears, and have them worked by unemployed; C.A.M. (California Authority for Money) which would issue bonds to finance the program and scrip cash as wages to the workers to be negotiable in stores man-



aged under the system; and C.A.P. (California Authority for Production) which would purchase idle factories and work them by unemployed. The State income tax in addition to the Federal tax would begin at \$5,000 a year and graduation would reach 30% at \$50,000 which would become, in effect, the maximum income enjoyable in California. Bequests up to \$50,000 would be free of State taxation. Above that figure, the tax would be 50%. In the election of 1934 Upton Sinclair was defeated by Frank F. Merriam, Republican.

His proposals have to be correlated with the contemporary Townsend Plan (*q.v.*), the radicalism of Governor Huey Long of Louisiana, the Alberta Policy of Premier William Aberhart (*q.v.*), and the theories of national dividend propounded by Major Clifford Hugh Douglas of Great Britain.

**Sheep.** A bumper corn crop, together with large yields of forage, resulted in the U.S. corn belt States having 3,286,000 lambs on feed Jan. 1, 1938, the second largest number on record. Every corn belt State, excepting Wisconsin and Minnesota, was fattening unusually large numbers of lambs. The lamb crop in the United States in 1937 numbered 30,712,000, which was 267,000, or less than 1%, under the 1936 crop, but about 2% larger than the five-year (1931-35) average. The total number of sheep and lambs in the U.S. on January 1 was 52,918,000 in 1938 and 52,588,000 in 1937. The slaughter of sheep and lambs, under U.S. government supervision, in 1937 was 17,250,000, compared to 17,216,000 in 1936 and a five-year average of 16,809,000. The U.S. wool clip in 1937 was estimated at 367,359,000lbs., which was about 7,000,000lbs. more than in 1936.

New Zealand in 1937 reached the highest point in its history in sheep production, the flocks numbering 31,315,818. The New Zealand wool clip was 315,400,000 pounds. South Africa, despite severe droughts that developed in the autumn, made a further increase in wool production, the 1936-37 wool clip being 266,945,000lbs., compared to 237,835,000 the preceding year. This was an increase of 28% in three years.

Owing to the break in prices the latter part of 1937 the South African Government announced that wool offerings would be limited in 1938 and the Government planned to finance farmers who wished to hold their wool. Although wool prices later improved Australian selling brokers announced that the selling season would be extended to June.

The United Kingdom entered 1938 with some slight increase in the number of ewes kept for breeding purposes. Sheep and lambs in England and Wales in 1937 numbered 17,182,800, compared to 16,648,000 in 1936. In Scotland there was a slight decline, 7,503,500 in 1937 and 7,557,000 in 1936, while in Canada there was a slight increase, 3,339,000 in 1937 and 3,327,000 in 1936.

Foot-and-mouth disease was severe among the flocks of France in 1937 and caused heavy losses of lambs. This is not reflected in the official figures, which are for the beginning of the year and show a sheep census of 9,788,000, an increase of 230,000 over 1936. No 1937 figures are available but Russia is said to have increased its number of sheep from 45,400,000 in 1933 to 64,000,000 in 1936. (*See also* LIVESTOCK.) (S. O. R.)

**Sheppard, Hugh Richard** (1880-1937), canon of St. Paul's Cathedral in London, was England's leading pacifist and an active social worker. For many years vicar of St. Martin's-in-the-Fields (1914-1927) and also dean of Canterbury (1929-1931), he wrote several books on religious subjects and was known widely through his broadcast sermons. He died in London, Oct. 31, 1937.

**Shingmun Dam:** *see* DAMS.

**Shintoism.** Shinto, the Way of The Gods, is the name of the indigenous religion of Japan. It has a long history, dating back to dim pre-historic times. Shintoism started as a form of animism, the sun and moon, fire, mountains, rocks, trees, animals and other natural objects being objects of adoration. Some atmosphere of animism still clings to the faith; and Shinto shrines, the entrance to which is always marked by a *torii*, or cross-bar, are usually located in beautiful natural surroundings, on the tops of mountains, or in the midst of groves, with running water nearby. Shintoism gradually evolved from animism into polytheism; its mythology is recorded in old chronicles of Japan, such as the *Kojiki* and the *Nihongi*. A special place of honour is accorded to Amaterasu-Omikami, the Sun-Goddess, who is regarded as the ancestor of the Japanese imperial family. Shintoism was substantially modified by the impact of Buddhism, which came into Japan from Korea and China in the sixth century, A.D. With its much more highly developed ethical and philosophical system, Buddhism tended to overshadow Shintoism, although the indigenous faith was not abandoned. There was some tendency toward amalgamation of the two systems; the traditional Shinto gods were identified with Buddhist deities. Shintoism also became permeated with Buddhist moral conceptions. There was a marked revival of Shintoism in the 18th century; and this was one of the most important spiritual forces which led to the overthrow of the Shogunate and the restoration of the Imperial power in 1868. Since the restoration a distinction has been drawn between Shintoism as a religion, which any Japanese may or may not profess, and so-called state Shintoism, which is regarded as a form of patriotic observance, compulsory for all Japanese subjects. A feature of state Shintoism is the performance of obeisance before shrines which are sacred to the memory of emperors and Japanese who have distinguished themselves in their country's service. The content of Shintoism has been officially defined as follows: (1) to practice principles of love of country and reverence for the gods; (2) to make clear the reason of heaven and the way of man; (3) to accept gratefully the rule of the emperor and to obey his will.

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**Shipbuilding.** The year 1937 opened with high hopes for the shipbuilding industry, but ended in disappointment and anxiety in practically all countries. Although prices were beginning to rise at the end of 1936, there was, generally speaking, little anxiety, as there were plenty of new orders coming into the yards; but within a short time prices had risen to such an extent that few shipowners could order new tonnage with any prospect of financial return, and new orders were practically confined to naval work and ships which, for one reason or another, had to be built for the special purposes of their owners.

This tendency was the same in all countries where the shipbuilding industry was not controlled. In Britain the figures were very carefully examined, and it was shown that shipbuilding prices advanced by roughly 75%, varying with the district and type of ship built, in nine months. Of this increase 70% was due to causes entirely beyond the control of the shipbuilders; and, ironically, one of the first increases was due to the increased freights that the owners were getting on imported steel plates.

The rise in prices naturally caused serious loss to builders who had taken contracts at the beginning of the revival at only a reasonable profit, to help cover work taken at a loss during the depression in order to keep the technical personnel together. In the case of the Orient liner "Orcades" (23,456 tons), which was



ordered in 1935, the owners announced that she would have cost them £400,000 more had she been ordered at the end of 1937. With improved freights and the demand for immediate delivery, many ships which had been built at a loss were sold, sometimes before delivery, at a very high price, to the chagrin of the builders. It is unfortunate that the general level of shipbuilding prices is unlikely to fall for some time at least.

For a large part of the year the builders of most countries in the world were also handicapped by the shortage of steel, and this was made worse by the rearmament programs, which demanded priority. Deliveries were delayed, in many cases, until the peak of freights had been passed.

Short as the revival was, it had far-reaching results. During the long slump a large number of economizing devices had been patented, both in the hull, to reduce the horse-power necessary, and in the machinery, to reduce the fuel consumption per horse-power. Many of these, whose patentees were not in a position to build or convert ships to demonstrate them, seemed likely to pass without recognition, but when shipbuilding was revived, it was fully realized that many costs were bound to rise, and must be balanced by fuel economy and greater efficiency. Ideas were therefore given a practical test at sea, in competition with others, and the general standards were greatly improved.

Technical opinion is not unanimous as to the extent to which these improvements should be taken; it is actually a matter of mathematical calculation to balance the probable earning powers of the ship during her normal life with the first cost, and the interest and depreciation which depend on it. Complicated construction and royalty fees may render her unprofitable, while all claims to improved economy are justified. Alongside many ships of the most ingenious design, there have therefore been built a number whose keynote is simplicity, although the general use of testing tanks for all new ships has vastly improved hull forms. The difficult design of the popular motor coaster, with its shallow draught, has been strikingly improved by this means, particularly round the stern.

In the engine room the most striking feature of the year 1937 was the reaction in many places towards steam against the Diesel engine. This has been most conspicuous in Japan and the Scandinavian countries, in which the Diesel engine appeared to be adopted for all types, but where each case is now considered on its merits. The steam plant installed is nearly always one of the improved economy types, of which many have been patented, and the general tendency of all steam plants is towards higher pressure.

The advantages of higher pressure and more modern engines are well known in the acceleration of the Union-Castle steamers for the new Cape mail contract, which demands about 20 knots instead of 17. This was contrived so economically in space that it was possible to suppress one of the boiler-rooms necessary when the ships were built in 1921 and 1922, and to substitute oil-fuel tanks. In the later motor ships, entirely new Diesel engines, two-stroke double-acting, of 50% greater power, had to be substituted, but it was possible to obtain the increased power without increasing the machinery space. The modernization of motor ships in similar fashion to satisfy the constant demand for higher speed is being carried out on a large scale in Italy and Germany, generally with an improvement of the bow lines by drawing out the hull forward.

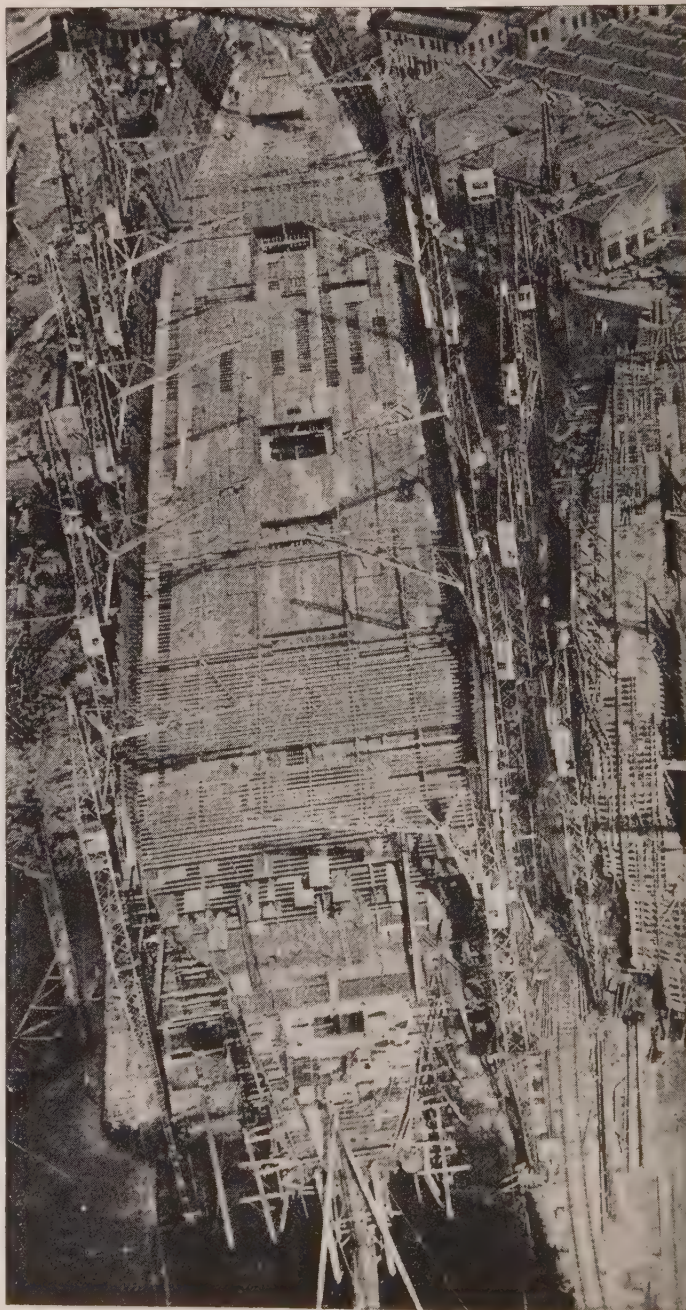
The substitution of welding for riveting has made great progress during the year to save weight. In most cases only certain parts of the ship, internally and on deck, are welded, but several ships have been built entirely by that process, and are being carefully watched on service.

One of the most interesting types for which all-welding has been

tried is the spirit tanker, for the rapid corrosion of these ships always starts round the rivet-heads. This experiment is being tried principally in the United States, where steam is still favoured, while practically every modern tanker in Europe is Diesel-driven. American owners have also carefully tested tankers with the Arcform hull against those of orthodox design, and have obtained approximately the same speed with 3,000 s.h.p. against 3,500.

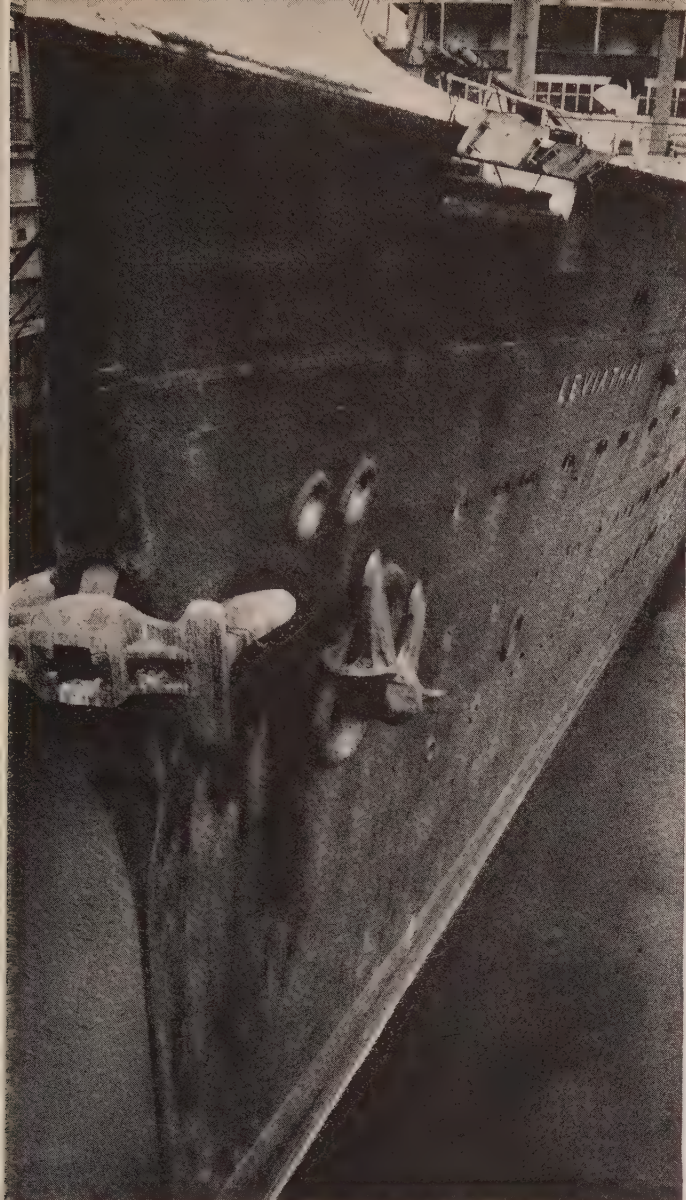
The maximum economical speed for tankers on ordinary commercial service is still in the neighbourhood of 13 knots, but the construction of a number of Japanese motor tankers, with State aid for naval purposes, with trial speeds of 19 and 20 knots has caused great interest, especially in the United States, where the Government is being urged to take similar steps.

The German shipbuilding industry has been working to capacity, under strict control, on the modernization of the German merchant service, and has obtained a large number of foreign orders through the currency regulations. The Italians are planning a



ANOTHER GIANT OCEAN LINER for England, the Ship 552, sister ship of the "Queen Mary," being built at Clydebank, Scotland





U. S. "LEVIATHAN," formerly the German "Vaterland" and largest ship of its day, sold for scrap metal to a British firm

colossal State-aided shipbuilding program, aggregating 1,000,000 tons gross. The first 250,000 tons are to be for the modernization of the liner fleets, the remainder for the creation of an up-to-date tramping fleet on what are understood to be novel designs. The Russian Government has had great difficulty in keeping to schedule with merchant shipbuilding in its national yards, but that is probably due to increased pressure of naval work, details of which have been kept very secret.

The most interesting ships started or completed during the year are the improved "Queen Mary" for the Cunard-White Star Line, and the same company's new "intermediate" steamer "Mauretania," with a gross tonnage of about 35,000 and a speed of 22 knots. A very similar ship is being built for the United States Lines to replace the "Leviathan." For the long voyage to Australia the Shaw Savill Line is building the 27,000 ton "Dominion Monarch," with a speed of 19½ knots, with four opposed-piston Diesels. The Belgian Government's cross-Channel packet "Prins Albert" is now the fastest merchant motor ship afloat. (See also SHIPPING, MERCHANT MARINE.) (F. C. Bo.)

**Shipping, Merchant Marine.** Nineteen-thirty-seven was a year of great importance to shipping all over the world, and of not a little difficulty. The latter part of 1936 showed promise of better times after the

longest slump in history, lasting with practically no break since 1921 and in intensified form since 1929; and the first nine months of 1937 more than fulfilled the promise. It was generally realized, however, that only a proportion of the progress was due to a permanent improvement in genuine international trade, the greater part being owing to an unusual grain movement due to crop failures, the rearmament policy of the various Powers demanding raw materials, and warlike operations in Spain and the Far East.

**Tramps.**—The improvement was most conspicuous on the tramping side—ships chartered to take full cargoes by single interests as opposed to the liners running to regular schedule with the goods of numerous shippers and the rates of freight were helped by the withdrawal of so many Spanish and Japanese tramps from the market. The index figure prepared monthly by the chamber of shipping of the United Kingdom may be taken as giving a very fair indication of the tramping business all over the world. Taking the average of 1929 as 100, the figure in January was 131 and the peak in September 172.2, less than 43% of the 1920 rates, after which it declined sharply. As the British Tramp Subsidy Law of 1935 was based entirely on the 1929 level of freights, the owners received no help from the State.

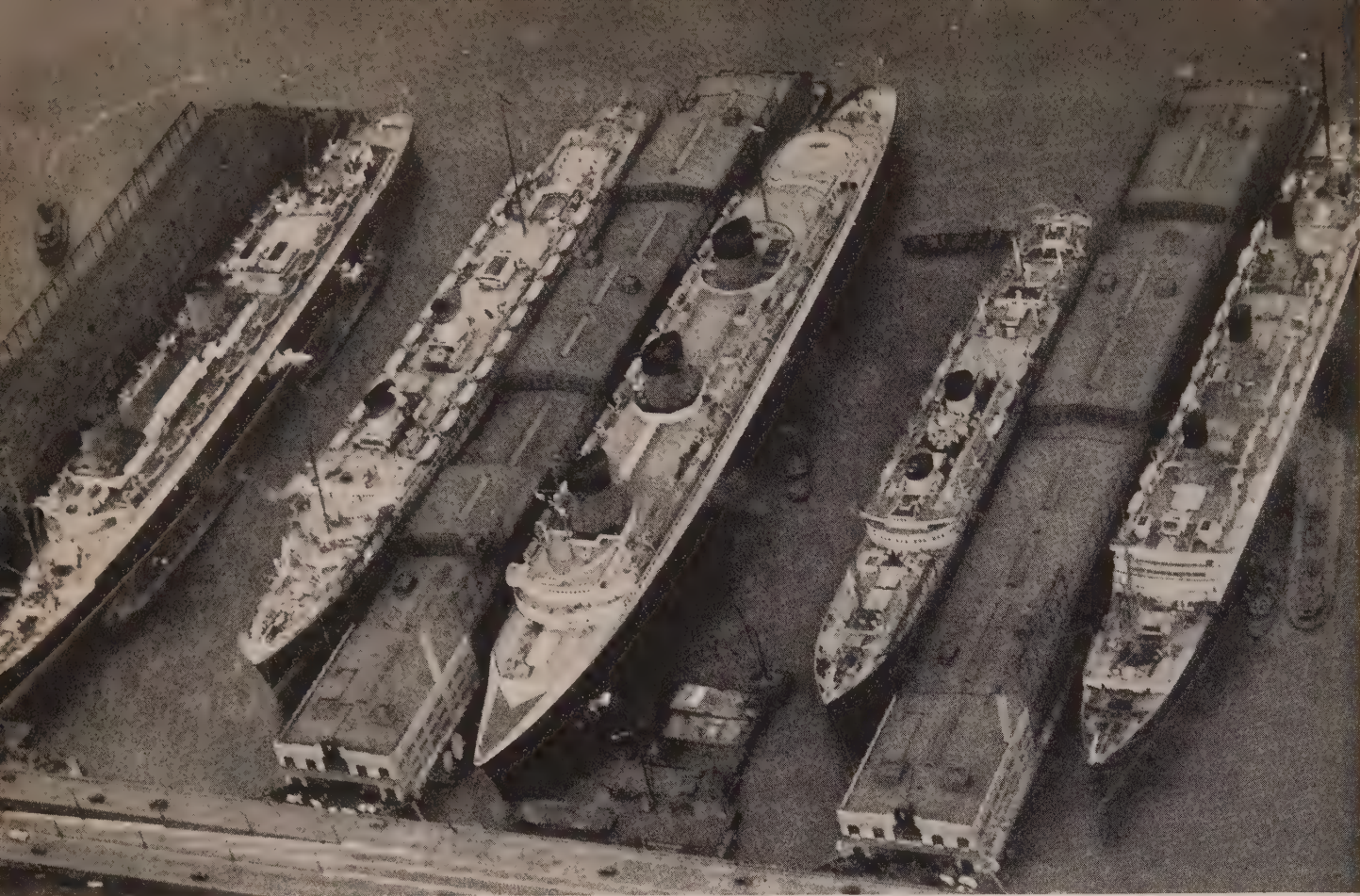
The greater demand for tramps showed the advantage of the more up-to-date ships built with improved hull forms and machinery (see SHIPBUILDING), whose speed was generally better than the older types, especially in bad weather, and which were therefore enabled to make more voyages, while they were more economical in manning, fuel, insurance premiums, port dues, and many other directions. The general increase in practically every expense paid by the ship-owner, more under some flags than others but considerable everywhere, prevented most tramps showing the profit suggested by the better freights.

**Seamen.**—Although there were, only a few years ago, a large number of seamen of all grades unemployed, the continuance of the slump with so many ships laid up naturally having caused many of these men to seek work ashore, when the ships were re-commissioned there was, in most countries, a serious shortage of trained seamen of good reputation. In order to tempt lads of the right type to become seamen—and to remain at sea when they were trained—it has been necessary for the owners to make great concessions in pay, hours of work, victualling, conditions, and accommodation, which have added greatly to the expense of running ships. In the British merchant service a contributory pension scheme has been established for all officers, the owners raising pay sufficiently to cover the officers' contributions, and social legislation or regulation has been framed in most European countries to make sea life more attractive.

Throughout Europe the greatest shortage has been in qualified marine engineers. This has been caused partly by naval demand on terms which are generally tempting, partly by better chances of employment ashore, especially in munition works and public utility undertakings, and partly by the shortage of recruits through the idleness of the shipyards and engineering works, in which the marine engineer usually serves his apprenticeship, during the depression.

These difficulties and increased running expenses of the shipping industry have helped to bring about a spirit of co-operation in a business in which co-operation has generally been regarded as impossible and cut-throat competition the recognized condition, even within each national flag. When the British Government introduced the tramp subsidy, it was made a condition that the owners benefiting should co-operate as much as possible. Not only was this done, but when the subsidy was discontinued and there was no question of compulsion, British tramp owners decided to continue voluntarily. More than that, owners of cargo liners agreed to work with the tramp interests, and at the end of the





FOUR OF THE WORLD'S LARGEST LINERS and a smaller ship docked at New York. Left to right: the "Europa," "Rex," "Normandie," "Georgic" and "Berengaria"

year a large proportion of the tramp ship-owners on the continent of Europe came into the scheme. The minimum freights thus established make practically no difference to the retail prices of commodities, particularly foodstuffs, but they make all the difference to the ship-owner.

Generally speaking, the cargo liner companies did not benefit by the better freights nearly as much as the tramps. Their published rates are in most cases regulated by conferences among themselves and also by long-term agreements with their clients, so that when the rising expenses that they shared with the tramp owners forced them to increase their rates, it was by very slow degrees, for which many firms were blamed by their shareholders. Experience in the latter part of the year proved their policy to be a wise one; when commodity prices became uncertain, the consignees were not so willing to incur the risk of importing full cargoes, and had the parcels rates of the liners been less reasonable, they would probably not have ordered at all. A number of the older and slower ships built as cargo liners were sent to the tramp trade when they could not satisfy the merchants' demand for speedy delivery, and many of the new, fast ships designed as tramps were taken up on time charter by the liner companies.

**War.**—The Spanish and Japanese campaigns had a big influence on shipping business, and not only by their withdrawal of tonnage from the market. The Japanese had time-chartered a number of ships, mostly Scandinavian, during the period of preparation, and the question of war risk to these ships soon assumed an acute form. In the Spanish trade, also, this aspect became very important, although both sides were willing to pay almost any price for shipping facilities. The considerable use of air attack on shipping, often well outside territorial limits and frequently directed, on account of the difficulties of identification, against ships which had nothing to do with the war, proved that post-war

international agreements for the safety of the crews of merchant ships attacked are quite useless in wartime, although, on the other hand, air attack on unprotected merchantmen has proved surprisingly futile. The few ships that have been destroyed have all been of very small tonnage; when bigger ships were attacked, even in favourable circumstances, direct hits proved very difficult to score, and when they were registered, the damage done was very much less than had been anticipated.

The utilization of shipping in the war areas has again brought up the old sore point of national registration: on the one hand, there is strong feeling in some countries against the national flag being used for the protection of ships which are really foreign in every respect except formal registration, and in other countries there is anxiety concerning the transfer of ships, badly needed for national purposes, to foreign flags in order to take full advantage of war prices. Some of the minor Powers, on the other hand, have encouraged these transfers to obtain the benefit of the situation.

**Scrapping Market.**—Owing to the profits to be made by any efficient ship, the scrapping market has been restricted to those ships which would cost too much to put into running order or those whose type prevented their being run at a profit. The maximum economical price was soon reached, but at that the ship-breakers bought practically every available ship, headed by the famous American "Leviathan," which was the biggest ship in the world when she was built as the German "Vaterland" just before the World War. She and a number of steel steamers, built for the U.S. shipping board between 1918 and 1920, crossed the Atlantic to be broken up.

**Passenger Business.**—Generally speaking, the passenger business during the year has been fairly prosperous, although handicapped by increased prices like the other sides of the shipping



industry. The increased number of stewards demanded by the modern passenger has had much to do with that, while the individual stewards have to be better paid and very much better accommodated. A larger number of passengers have booked on most of the regular routes, but the special rush of overseas visitors to Britain for the coronation of King George VI, and the use of passenger liners as floating hotels in the Thames during the coronation season, proved very disappointing.

Generally speaking, yachting cruises in Europe have not proved as popular as in previous years, with the conspicuous exception of certain popular ships, whose owners have made a very special study of the demands of the business. One reason for this was certainly the necessity of cutting out the popular Spanish calls in the shorter and cheaper cruises. On the other hand, European passenger ships which have a convenient call from which there are good facilities for returning by another ship after a conveniently short stay have found a rapidly increasing number of holiday-making passengers, and more have booked for the whole of a long voyage for purely pleasure purposes.

Another very interesting development of the passenger business has been the increasing tendency to travel in the fast cargo liners, of which most of the modern ones have been designed to carry the maximum number of passengers without a passenger licence, generally 12. Although they cannot offer the social amenities of the purely passenger ship, their accommodation is usually very comfortable, and they are particularly popular with invalids ordered a sea voyage as a rest, and business men visiting their overseas connections, who find the time that has to be spent in port handling cargo much more convenient than the short stays of the mail ships, which force them either to hurry their business or else waste time waiting for the next ship to call.

**Trading Restrictions.**—On the question of subsidies and trading restrictions the shipping world is divided, much as it was before, between the States which believe in the policy and those which do not. There have been no major changes of policy, and the principal alterations in detail have been in the United States, where the authorities have rationalized the payment of subsidies to save money where there has been inadequate national return. Although, in accordance with her usual practice, all details are kept secret until the plan is complete, Japan is generally understood to be preparing a complete revision of her subsidy system to right the weaknesses in her merchant navy revealed during the operations in China.

**Russia.**—Russia's State fleet has been steadily increased, partly by purchase abroad, but principally by new construction under the current five-year plan, and the charter of foreign ships for foreign trade has naturally declined. The ultimate aim of carrying all Russian trade in Soviet Government ships is constantly kept in mind. The use of the northern seaway across the top of Siberia—the north-east passage which cost the lives of so many early explorers—has been increased, and the work of the scientific stations along it has eliminated many of its dangers, but this year has shown that it is still very much influenced by weather.

**Sailing Ships.**—Several of the few remaining sailing ships have gone from the list, some through disaster and others through being worn out, but the big ones in Europe have, for the first time for many years, secured outward business for at least part of their voyage to Australia and excellent freights for the carriage of grain home to Europe. At the same time their expenses are heavier, partly for the replacement of sails, etc., which is inevitable, and partly because the reduced demand for sail-trained seamen has robbed them of cheap crews.

The British Trinity House no longer demands sail experience before it will issue a sea-pilot's licence, and the Swedish Government has given up the same qualification for an officer's certificate.

The German authorities, however, have refused to follow suit.

The shipping of practically every country in the world where trade-unionism is allowed has been embarrassed by labour troubles during the year, either in the docks or in the ships or both. (See also UNITED STATES: *Merchant Marine*.) (F. C. Bo.)

**Shoe Industry.** Shoemaking is increasing rapidly the world over. Conservative estimates of production for 1937 indicate a 10% increase over the figures compiled by the United States Department of Commerce for 1936, which follow: Europe, 490,000,000 pairs, including United Kingdom, 130,000,000 pairs; Germany, 76,000,000; France, 50,000,000; Czechoslovakia, 30,000,000; and Russia, where estimates of outputs vary considerably, but reliable sources indicate not over 45,000,000 pairs. North America, 449,721,000 pairs, including United States, 415,000,000; Canada, 22,000,000; Mexico, 5,250,000. South America, 45,520,000 pairs, including Brazil, 19,000,000 pairs, and Argentina, 16,000,000. Asia and Oceania, 61,400,000 pairs, including Australia, 15,000,000 pairs of leather shoes and a volume of slippers estimated at 6,000,000 pairs; British India, 4,300,000 pairs; China, 7,500,000; Japan, 9,500,000. Africa, 16,000,000 pairs, of which the South African Union produces about 47%. Production in the United States accounts for almost 40% of the world's total, with preliminary data placing the 1937 estimated output at 450,000,000 pairs.

Two factors contributed to the increased world-wide shoe production: (1) increased efficiency and economy in shoemaking and an appreciation the world over of a wider range of sizes and widths, necessitating larger basic stocks in warehouses, stores and consumers' hands, and (2) footwear for military use because of wars and rumours of wars.

The mechanization of the shoe industry has been accelerated by the international use of mechanical equipment developed first in the United States, and now in universal use. Shoemaking skills will continue to increase in countries not now using machine-made shoes for general wear because of the aptitudes developed through the use of the sewing machine.

**Trading.**—Export trade has been made more complicated by preferential rates of import duties granted in British Empire countries to products originating within the Empire. Other nations have established embargoes and quotas and higher duties to shelter their own shoe markets. The United States trade agreements have had little effect in increasing the export or import of footwear; and with the exception of a contemplated Czechoslovakian trade agreement, proposed in 1937, which was violently objected to by the shoe industry in the United States, there has been no conflict in reciprocal agreements.

**Rubber Footwear.**—Rubber boots, galoshes, overshoes and rubber-soled canvas shoes, showed signs of increasing in production in 1937, for certain types of rubber footwear can be made so cheaply in price that they serve the purpose of foot covering. The export and importation of rubber footwear between countries is decreasing; and it is doubtful whether the all-time record of 80,000,000 pairs produced in 1933, will be surpassed.

(A. D. AN.)

**Shooting.** Probably a larger head of game was reared in Great Britain during 1937 than at any time since the war. While the sale and breaking-up of many large estates has had the effect of reducing the bags of individuals and on any one property, credit must be given to the system of syndicate shooting for the present satisfactory state of preservation obtaining today. It can also be said that more persons shoot now than formerly. If grouse were "patchy" owing to the depredations of the heather beetle, and partridges scarce in places on account of disease,



pheasants did extremely well, and among wild fowl greater numbers of geese, especially brent, have been in evidence. In America more attention is being directed towards methods of game preservation, partly perhaps because duck shooting—the mainstay of American shooters—has, since the recent years of drought, not reached its usual standard.

Clay-pigeon shooting, which affords excellent practice, continues to be a popular form of sport. In rifle shooting, the Scottish deer-stalking season produced a few good heads; while on the Bisley ranges the King's Prize was won for the first time by a member of the O.T.C.—D. L. Birney, lately of Cambridge university—and the Dewar cup (miniature rifle shooting) was won by the English team for the first time for many years. (See also TRAP-SHOOTING.) (W. H. T. L.)

## Shows.

In the United States, at the South-western Exposition and Fat Stock show, 5,000 head of stock were entered, and 250,000 people attended. Awards at the Illinois State fair amounted to \$150,000, and at the Missouri State fair to \$48,000, where attendance reached 270,800. The American Royal Livestock show in Kansas City laid emphasis on young farmers, and at the Nebraska show the chief competitions were for junior farmers. The 38th International Live Stock exposition was held in the new amphitheatre at Chicago stockyards. The judge of the international steer class was Alexander Ritchie, of England.

In Great Britain, a new challenge cup was offered at the Perth show for the best three bulls, offspring of one sire, and the champion bull fetched 700 guineas. The duke and duchess of Gloucester attended the Ayr Centenary show, at which Mr. Kilpatrick won the male and British Friesian and Mr. McAlister the Ayrshire cattle championships. The King won at the Devon Coronation show, and at the Royal Counties show, Reading, he showed the best young bull. The minister of agriculture visited the Three Counties show, where Herefords led with 98 out of 1,203 entries; "Freetown Endor" was champion bull and "Phocle Rosina" champion female. "Greencroft Marquis" was male champion at Newcastle, and also at Lancashire, where "Holmescales Meadowsweet" won the supreme championship for dairy cows. At the Royal show, Wolverhampton, 16 prizes went to Scotland. The duke of Westminster won the Brackenhurst trophy. British Friesians won the Bledisloe trophy at the British Dairy Farmers' Association show, and "Fothering Foggathorpe II's" awards included the supreme individual championship trophy. At the National Dairy show, Mr. Ball won outright the Spencer challenge cup.

**Horticultural.**—At the International Flower show, New York, the New York Botanic Garden won a medal for Mediterranean plants. Entries from foreign countries were received for floriculture at the Illinois State fair, which included a gladiolus show. Nearly \$1,000 were offered at the Missouri State fair for horticulture.

At the Royal Horticultural Society's spring show, at Chelsea, London, the Sherwood challenge cup went to Messrs. Allwood, the Cain challenge cup for amateurs to Mr. Lionel de Rothschild, and the trophy for the best six orchids by amateurs to Mr. Wharton. At the autumn show, the Coronation cup was won by Messrs. Sutton, and also a silver gilt cup to commemorate the accession. Similar cups went to Mr. J. Pierpont Morgan, Messrs. Hillier, and Mr. Stuart Ogg, and the Wigan rose cup to Mr. Alex. Dickson. At the British Carnation Society's show the *Daily Mail* challenge cup was won by Messrs. Allwood. Only four new varieties were entered at the National Rose Society's show. To commemorate the coronation, every gold medallist received a cup. At the National Dahlia Society's show the best new variety was by Messrs. Stredwick, and Mr. Valentine Smith won the amateur cup. Mr.

Ingwersen won the Farrer memorial medal at the Alpine Garden Society's show.

**Horses.**—In the United States, classes for draft horses were included in the International show at Chicago and the Illinois State fair.

At the American Royal show there were classes for all light horses and drills by artillery teams. The Illinois State fair had the same range of light horses in addition to draft horses. A novelty at the South-western exposition was "Dressage," the art of guiding a horse without apparent movement or sound.

At the British Shire Horse Society's show, Messrs. Mann, Crossman & Paulin produced the best commercial exhibit, and a judging competition for young farmers was held. The male, reserve, and female champions were similarly placed at the Royal show, where Messrs. Chivers won the male championship for percherons. Mr. Kilpatrick won the Glasgow Stallion show's supreme championship for the 12th time, and a Clydesdale won the 1938 premium of £100. Clydesdales from Scotland won at the Melbourne Royal show, Australia, and at the Canadian National exhibition.

At the International Horse show, London, foreign jumping teams came from the United States, France, Germany, Belgium, Rumania, Turkey, and Ireland, the last-named winning the Edward, Prince of Wales, Gold challenge cup. The King George V cup for officers' jumping went to France.

The Buccleuch Hunter Breeding Society inaugurated an annual show of hunters and young stock. Captain Buchanan owned the champion thoroughbred stallion at the Thoroughbred and Hunter show. Lord Inverclyde owned the champion hunter at the Kilmarnock show. At the Highland and Agricultural Society's show, 61 hunters, 35 Highland, and 29 Shetland ponies were entered.

**Dogs.**—In the United States, the Morris and Essex show offered 275 sterling silver trophies to be won outright. The best dog was an English setter. At the American Fox Terrier Club show the best was "Glynhir Golden."

In the English shows, cocker spaniels led the numbers. In Scotland Labradors were favourites. Cruft's had 9,949 entries. New breeds were Basenjis, hunting dogs from Central Africa, and Rottweilers, guard dogs from south Germany. At the Kennel Club show entries numbered 5,899. Novelties were Pomeranian sheep dogs, a husky, and Bernese and Apenzell mountain dogs. The West of England Ladies' Kennel Society show had 5,607 entries, and there were 4,883 entries at the Ladies' Kennel Association show. At the Kensington show the Frank Butler memorial trophy went to Mr. Chapman's champion "Heather Realization," a Scottish terrier, who was best at the Ayr Centenary show, where there were over 2,000 entries in the dog section. At the National Terrier show, 103 out of 1,539 entries were Cairns; the supreme winner was a Sealyham bitch. Dog breeders in Kenya sent in 200 exhibits to the East African Kennel Club show.

**Cats.**—At the Blue Persian Cat Society's show entries were 353. Prizes for first adult male, best cat, and best exhibition went to "Heatherland Blue Boy," champion at Newbury. The Croydon show had 753 entries, the best was "Sherry of Hanley." At the Thames show, cat section, "Daybell" was the best adult male, and best cat. (V. R.)

**Siam,** kingdom of southern Asia between Burma and French Indo-China, extending southwards into the Malay Peninsula; area, 200,000 square miles; population, 14,500,000. The king (*b.* 1926), Ananda, at present studying in Switzerland, succeeded on the abdication of his uncle and predecessor in 1935; a Council of Regency represents him pending his majority. The people are almost without exception Buddhists of the Hinayana school. There are two universities, one (founded 1934) being



concerned entirely with social science teaching; elementary education is free and compulsory, and is carried on in some 9,000 schools, most of which are connected with Buddhist monasteries. The capital, Bangkok, had a population of 681,000 in 1937; other large towns are Chiangmai (545,000) and Ayuthia (300,000).

**History.**—Since 1932, Siam has been ruled as a democratic constitutional monarchy with a popular assembly, and very rapid progress has been made in recent years in the modernization of the country, particularly since the abdication of King Prajadhipok in 1935. On Aug. 2, 1937, the Council of Regency resigned, after charges had been made of improper sales of land belonging to the king; it was re-elected without change two days later. A treaty of commerce and navigation with Japan was signed on Nov. 2, and a similar treaty with Great Britain on Nov. 23, by which in each case extraterritoriality was abolished. The project of cutting a canal through the Kra isthmus was revived in 1937, and at the end of the year there were strong rumours that Japanese engineers were undertaking preliminary surveys.

**Agriculture.**—Rice is the principal agricultural product; teak, tin, and hides are exported. Communications are being rapidly improved; there are 2,000 mi. of railroad, and recently an 18-year road plan has been put forward, involving an expenditure of some £15,000,000; in the first five years 2,000 mi. of roads are to be reconstructed.

**Finance and Banking.**—The 1937 budget provides for a revenue of £9,536,000 and an expenditure of £9,535,000. The currency unit is the gold baht (formerly the tical), exchanging at 11 to the pound sterling. In 1936–37 the total exports were £16,808,000 and imports £10,007,000. There is no State bank, but most of the Far Eastern and Chinese banks operate in the country.

**Defence.**—Universal military service is exacted; the effective strength of the army is over 25,000. The air force and navy at present are being greatly strengthened, and submarines and warships are on order abroad.

**Siberia,** a geographical term formerly used to denote the whole of Asiatic Russia lying north of Kazakhstan, Mongolia, and Manchuria. The term has no longer any political significance, and even its survival in the eastern Siberian Province and the western Siberian Region of the Russian Soviet Federated Socialist Republic came to an end in Sept. 1937. (See also UNION OF SOVIET SOCIALIST REPUBLICS.)

**Sierra Leone.** A British crown colony and protectorate in West Africa, lying between N. lat. 6° 55' and 10°, and W. long. 10° 16' and 13° 18'. Governor, D. J. Jardine, C.M.G. (appointed 1937); capital, Freetown. It was decided in Dec. 1937 that Freetown was to be provided with a regular peacetime garrison to man its coast defences. The 150th anniversary of the colony's foundation was celebrated, jointly with the coronation, in May.

Total area c. 31,925 sq. mi. (colony, 4,000 sq. mi.). The population of the colony (est. 1935) was 101,960; in 1931 the Europeans numbered 420; pop. of the protectorate (1931 census) was 1,672,2058, including 231 Europeans and 577 Asiatics. Freetown, the capital and port, had (1935) a population of 60,903. There are four secondary schools for boys, and four for girls.

The total length of railways in 1936 was 311 miles. Cable and Wireless, Ltd., maintain a cable office. In 1936 the export of diamonds (first discovered in 1930) was valued at £500,124, and that of palm kernels at £583,645. Total exports were £2,376,965, and imports £1,346,715. The currency of the United Kingdom is legal tender, together with West African silver and alloy coins. Revenue for 1936 was £969,668, and expenditure £879,370.

**Silesia, Upper,** the southern part of the former Prussian province of Silesia, was divided between Germany and Poland after a plebiscite in 1921. As the two parts were inhabited by Germans and Poles closely intermingled, and were rich in coal, iron, zinc, lead and other minerals which had been previously exploited as a single economic unit, Germany and Poland, upon the recommendation of an Inter-Allied Commission, signed on May 15, 1922, the Geneva Convention to assure the protection of minorities and to preserve joint economic arrangements for a transitional period of 15 years. For three years the convention worked unexpectedly well. But in 1925 Germany began a trade war against Poland and suspended the purchase of Polish Upper Silesian coal, causing hardship to Polish miners. In 1926 Dr. Michael Graetzynski became governor of Polish Upper Silesia and at once began, through administrative pressure and through a private army, a vigorous Polonization policy. German business men and employees were forced out under the pretexts of "rationalization," "reorganization" and "incapacity of workers." German commerce was boycotted and schools for German children were closed. By 1937 the German minority in Polish Upper Silesia had been reduced by a mass exodus from 250,000 to half the number.

On July 15, 1937, the Geneva Convention of 1922 expired. The Germans wanted to renew it but the Poles refused. The Germans then extended to German Upper Silesia all the drastic Reich anti-Semitic laws, so that Polish Jews migrated to Poland, though Poland is no bed of roses for Jews. In Polish Upper Silesia a renewed campaign began against Germans: Lutheran pastors were dismissed; the German press was punished; more Germans were thrown out of work; and a law was prepared for expropriating large German agricultural estates in order to parcel them out as small farms to Polish peasants. Feeling became so bitter that Germany and Poland decided to sign on Nov. 5, 1937, a new treaty protecting their respective minorities. But the Germans soon complained, and with reason, that the local authorities in Polish Upper Silesia were not living up to the terms or the spirit of the new treaty. See article SILESIA in *Encyclopædia Britannica*; and W. J. Rose, *The Drama of Upper Silesia* (London, 1937). (S. B. F.)

**Silicosis.** The pneumoconioses, conditions of the lungs due to inhaled dusts, include only two forms generally recognized as symptomatic diseases.

Silicosis results from prolonged inhalation of sufficient quantities of fine, free silica particles. In normal lungs it is manifested by numerous small, uniformly distributed, discrete fibrous nodules. In areas of infection the fibrosis is massive with compensatory emphysema and associated dyspnoea. Only silicosis specifically predisposes to tuberculosis, of which a large but variable proportion of its victims die. Silica is not a mechanical irritant, but possesses specific injurious physio-chemical properties. The generally accepted solubility hypothesis is now being questioned. Recent experiments suggest that other mineral particles associated with silica in the atmosphere may retard its inhalation or action on the tissues.

Asbestosis consists of a diffuse fibrosis originating in the terminal bronchioles and spreading peripherally to obliterate the capillary bed. Dyspnoea and cardiac involvement may be marked in advanced cases. Predisposition to tuberculosis is not proven. Any associated infection often heals, accentuating the pre-existing fibrosis. Recent experiments suggest that asbestos fibres are mechanically irritating; many still believe in a chemical action.

Other silicates have been incriminated, but definite proof of activity is lacking. Non-siliceous inorganic dusts cause pigmentation without appreciable fibrosis. (L. GAR.)



## Silk and Silk Manufacture.

Consumer buying movements in the United States

are marked in two outstanding incidents in the 1937 history of the age-old silk industry. First was the innovation of compulsory labeling of the artificial silk fibre, commonly known as rayon since 1925 but also sold extensively under other private brand names, and the second a consumer boycott, individual and unofficial but growing rapidly by the close of 1937, against products originating in Japan.

The compulsory labeling was ordered by the Federal Trade Commission of the U.S. Government, on Oct. 26, 1937, after several months of preliminary campaigning by federations of women's clubs and similar organizations. The order compelled all handlers of rayon yarn, thread, fabrics or articles containing such yarn, thread or fabrics to use the generic term rayon for manufactured textile fibre or yarn produced chemically from cellulose or with a cellulose base and for thread, strands or fabric made therefrom, regardless of whether such fibre or yarn be made under the viscose, acetate, cuprammonium, nitrocellulose or other process.

Eliminating the confusion between the silk and the substitute fibres had long been anticipated as a boon to the silk industry, especially in garment fabrics, to offset the continually increasing large consumption of rayon. In Dec. 1937, the fabric industry was using only about 25% of the raw silk imported; the hosiery industry 75%. The immediate effect was that compulsory labeling showed that most of the garments were rayon and were giving satisfaction; that the silk industry in the fabric field was almost extinct. In hosiery, it was still silk, because of its superior elasticity over the rayon yarn. Experiments in knitting fine type rayon yarns, however, were alleged to be given impetus by wider public knowledge of the satisfactory wearing quality of rayon in fabrics. An "international incident" aggravated the situation. The Japanese war in China resulted in such a wave of anti-Japanese feeling that by the end of December some hosiery mills, the main-stay of the raw silk Japanese export trade, planned to make cotton lisle hose to meet the consumer demand. While it was pointed out that in an average pair of women's silk hose only 10¢ worth of raw silk was used, the other 70¢ being the value of American labour, the general boycott on things from Japan began to have its effect.

Statistically, the consumption of silk dropped definitely compared with the previous year. Better demand for silk occurred in the first four months of 1937 but after an average May and June, the remaining months witnessed a decline. Stocks of raw silk throughout the world, including Japan, China, Italy, England, the United States, etc., averaged 145,838 bales per month in 1937 compared with 160,871, in 1936.

(I. L. BL.)

## Silver.

The world's silver production is rather heavily centred in North America; this continent in 1929 furnished 75% of the total output, and 65% in 1936; Mexico is the leading producer, with 31%, followed by the United States with 25%, Canada with 9%, and the remainder of the continent (including Central America, West Indies and Newfoundland) 2%. The United States output has recovered from the effects of the depression, and has reached a level slightly above that of 1929, but Canada and Mexico are still low, the latter quite appreciably so. Although the United States, Germany, and especially Japan, Bolivia and the Soviet Union, as well as several of the minor producers have shown increases to above the 1929 level, the world total is low, due chiefly to the heavy deficiency in Mexico, Canada and Peru.

British production of silver is comparatively small; the United Kingdom itself has only a negligible output, and Empire produc-

World Production of Silver  
(In millions of fine ounces)

	1929	1933	1934	1935	1936
Canada . . . . .	23.1	15.2	16.4	16.6	18.2
United States . . . .	60.3	21.0	26.4	38.3	62.8
Mexico . . . . .	108.7	68.1	74.1	75.6	77.5
Other N. America . .	2.8	6.0	4.6	4.6	5.2
Peru . . . . .	21.5	7.3	10.4	17.1	19.0
Bolivia . . . . .	6.2	5.5	5.2	8.0	10.5
Other S. America . .	1.7	0.6	1.4	1.6	1.8
Germany . . . . .	5.5	6.3	5.9	6.3	6.3
U.S.S.R. . . . .	0.4	1.0	2.9	3.9	5.0
Other Europe . . . .	5.5	8.0	7.0	7.3	6.8
Japan . . . . .	5.2	6.0	6.9	8.2	9.6
India . . . . .	7.3	7.3	6.9	6.9	5.7
Other Asia . . . . .	2.3	1.9	2.2	2.4	2.8
Africa . . . . .	1.3	4.0	4.7	5.2	4.8
Oceania . . . . .	9.9	11.6	11.3	12.4	13.7
Total . . . . .	261.5	169.7	186.4	214.4	250.8

tion centres chiefly in Canada, Australia, India and South Africa. Empire production as a whole is still slightly under the 1929 level in ounces, but by less than the change in world output, so that the proportion of the world total in 1936 was 17% against 16% in 1929, and preliminary reports indicate further improvements in 1937, particularly in Canada.

The recovery of production in the United States has been fostered by the nationalization of silver, and by inflated Government purchases at an artificial price level far above world prices. The price of 77.57¢ per ounce for newly mined domestic silver, set by executive order on Apr. 24, 1935, expired on Dec. 31, 1937, and was re-set at 64.64¢ for 1938, the world price at that time being 44.75¢. Government purchases have also included large amounts of foreign silver, at the world price, with favourable results on the foreign output.

(G. A. Ro.)

## Simons, Walter

(1861-1937), German lawyer and politician; born in Elberfeld, September 24.

Appointed in 1905 to the bench of the Upper Provincial Court at Kiel, Dr. Simons entered the Reich Office of Justice, Berlin, in 1907. In 1911 he joined the legal department of the foreign office. He took a prominent part in the negotiations of the war treaty with Turkey and of the Brest-Litovsk treaty with Russia. In 1918 he became ministerial-director under Prince Max of Baden, and retained that post after the revolution. Returning to the legal department of the foreign office, he went, in Jan. 1919, to Versailles as commissioner-general of the German delegation, but resigned in June rather than accept the allies' terms. From 1920 to 1921 he was foreign minister in the Fehrenbach cabinet, and from 1922 to 1929 was president of the Supreme Court of the Reich. From March to May 1925 he was deputy president of the Reich, filling the gap between Ebert's death and the election of von Hindenburg. Apart from his political and legal activities, Dr. Simons was a prominent churchman, and was president of the Evangelical Social Congress. He died in July 1937.

**Simpson, Mrs. Wallis:** see WINDSOR, EDWARD, H.R.H. THE DUKE OF.

**Sinclair, Upton:** see SHARE-THE-WEALTH PROGRAM.

**Singapore,** the capital of the Straits Settlements (*q.v.*) and main port of south-eastern Asia, is located on an island, of the same name, 27mi. long and 14 broad, area 225sq.mi., at the tip of the Malay peninsula. It is situated at 1°20' north. Population (1936) 490,155, including 347,117 Chinese, 45,077 Malays, 41,402 Indians, 8,338 Europeans, 7,151 Eurasians, 3,695 Japanese and 4,375 others. In 1819 Sir Stamford Raffles obtained Singapore, then a deserted island, from the sultan of Johore for the East India Company for a small fee. It is now a major



trans-shipment port, carrying on trade valued at one billion dollars annually, with shipping of all sorts, amounting to 30,366,511 tons, calling there in 1936. Commanding the main navigable channel through the maze of islands and treacherous reefs in the Malay archipelago and located at the crossroads of south-eastern Asia, where the main trade route from Suez and India diverges northward to China and Japan and southward to Australia and New Zealand, Singapore enjoys an advantageous position in naval strategy as well as in trade. It has been selected as the site of the largest British naval base in the Far East. This base is on the opposite side of the island from the city of Singapore and faces the Strait of Johore, which separates the island from the mainland. Two of its most striking features are an enormous graving dock, 1,000ft. long, and 130ft. wide, completely surrounded by concrete walls and deep enough to handle any ship afloat today. There is also a floating dock, third largest of its kind in the world, which had to be towed out to Singapore in several parts, barely scraping through the Suez canal, and which is able to lift a 50,000 ton battleship out of the water.

By the end of 1937 a base capable of accommodating a powerful squadron of large battleships had been created on what was formerly a jungle swamp, although no considerable naval force had yet been concentrated there. Defence plans for Singapore contemplate co-ordination of land, sea, and air forces. Powerful coast artillery has been mounted at Changi, the town at the eastern entrance to the Strait of Johore. A good deal of attention is being paid to air forces, which include two squadrons of flying boats.

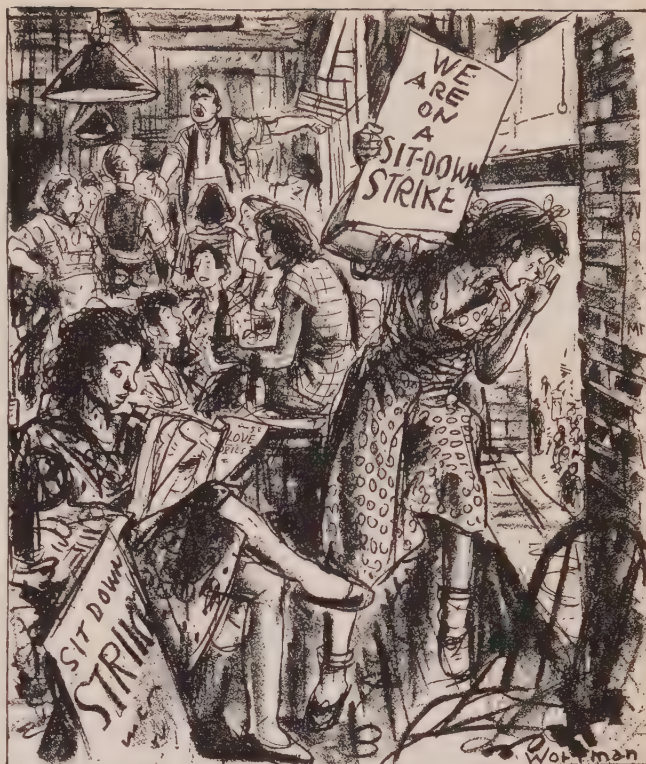
Manoeuvres which were held in February, 1937, with the participation of warships and aeroplanes from places as far removed as Hongkong and Irak, designed to test the defences of Singapore, yielded satisfactory results, according to the official statements which were issued at that time. Singapore is an important centre for commercial aviation, being a port of call both for the Imperial Airways and for the Royal Dutch Airlines. On the neighbouring island of Pulau Brani is the largest tin smelting works in the world.

(W. H. CH.)

**Sin Kiang** (CHINESE TURKESTAN), area 633,802 sq.mi., population 2,588,000, is one of the largest, most remote and sparsely populated sections of China. A large part of this vast territory consists of desert, which accounts for the scanty population. The principal towns are Kashgar (80,000), Yarkand (75,000) in the south-west, and Urumtsi (50,000) in the north. The latter is the seat of the Chinese Administration. The chairman of the Provincial Government is Li Yung. Sin Kiang is not an integral part of China and is largely inhabited by peoples of Turki and Mongolian stock.

Since 1931 the province has been disturbed by intermittent civil wars, which began with the rebellion of some of the Mohammedan tribesmen against the Chinese administration, but have been complicated by local tribal feuds and by Soviet intervention. Soviet troops entered Sin Kiang in 1934 and played an important part in driving back the Mohammedan rebels, who were threatening Urumtsi. Most of the province is now under the control of the Chinese Administration, which is under strong Soviet influence; but some of the southern districts remain in the hands of the insurgents.

A number of émigré White Russians have also been used by the Chinese officials to bolster up their authority. Even before Soviet political intervention took place, Sin Kiang had been gravitating toward the Soviet Union economically because of the disruption through banditry and civil war of the ordinary long caravan routes to China. The completion in 1930 of the Soviet Turkestan-Siberia railway increased this trend; and Soviet exports



"HELLO, MAMMA, we're makin' history." The sit-down strike, as pictured in *The New York World-Telegram*, in W. H. Ch.'s "Metropolitan Movies"

to Sin Kiang increased from 418,000 roubles in 1923-24 to 15,698,000 roubles in 1932.

(W. H. CH.)

**Sino-Japanese War:** see CHINESE-JAPANESE WAR.

**Sit-down Strikes.** In the twenty-ninth year of King Rameses III (1179 B.C.) workers in the royal cemetery of Thebes sat down behind the temple of Thutmose III and refused to work until given their food allowance for the month Tubi (October). "We came here," they said, "because of hunger and thirst; we have no clothes; we have no salves; we have no fish; we have no cabbage." Given some food after three days of argument they resumed work. But in Phamenoth (December) they again "stepped over the wall" and "sat down by the city of the dead" and controversies continued until the second day of Pachon (February) when the workers finally received all the food due them.<sup>1</sup>

Workers constructing the Rouen Cathedral (1485 A.D.) struck for better wages and working conditions. Fearing importation of foreigners, they occupied the unfinished cathedral and declared they would destroy it if attacked by troops. Their victorious strike was followed by other cathedral-builders' sit-downs between 1485 and 1507.

The Lyons bakers' "sit-down" in 1565 was broken by the army. When the typographers of Lyons were ejected from the print shops by the army (1730) they smashed the printing presses. Sit-downs in the Lille textile factories (1750) ended in bloody fights with the troops and replacement of the strikers by German and Belgian weavers. Textile sit-down strikes in England (1817) ended in the burning of the mills during resistance to troops.

More than a century elapsed before the modern sit-down strikes in France and the United States. (See also AMERICAN FEDERATION OF LABOR; COMMITTEE FOR INDUSTRIAL ORGANIZATION; DETROIT; LABOUR; LABOUR UNIONS: *Sit-down Strike*; MICHIGAN: *History*; STRIKES AND LOCK-OUTS; UNITED STATES: *Labour*.) (D. D. L.)

<sup>1</sup> Reported by Dr. W. H. Dubberstein of the Oriental Institute, University of Chicago.



**Skating:** see ICE SKATING.

**Skiing.** The rapid growth which skiing has attained in the United States was temporarily stunted by the scarcity of snow during the winter of 1936-37. Week after week snow trains, scheduled to leave metropolitan areas for mountain resorts, were forced to cancel their trips. Warren Chivers of Dartmouth college won the U.S. combination cross-country and ski-jumping championship in the two-day competition at Minneapolis, Minn., February 13 and 14. He won the cross-country event by 3 minutes and had jumps of 160 and 157 feet. In the class A jumping group Eugene Wilson of Coleraine, Minn., gained top honours with jumps of 201 and 197 feet. Dick Durrance of Dartmouth won the national amateur downhill championship over the course on Boulder mountain, near Ketchum, Idaho, March 13. He was timed in 5 minutes 1.1 seconds. Durrance added to his laurels by winning the national slalom title the following day, making his runs in 1 minute 1 $\frac{3}{4}$  seconds, and 1 minute flat. Dartmouth retained the Intercollegiate Ski Union championship and the Dartmouth Cup with a perfect score of 500 points in the annual three-day competition at St. Marguerite, Quebec, February 25 to 27. The United States Eastern Amateur Ski Association's annual jumping championships had in its entry a fine array of international talent. The contests marked the official opening of the 60-metre slide on Rowe mountain in New Hampshire, February 28. Sigmund Ruud of Norway, with leaps of 218 and 202 feet, won the class A jumping by the slim margin of nine-tenths of a point over his compatriot, Sverre Kolterud, who leaped 214 and 204 feet. Kolterud was adjudged winner of the Eastern combined championship, having won the cross-country race the previous day. (J. B. P.)

**Slate.** The leading slate producers, in order of importance, are the United States, United Kingdom, France, and Germany; the Soviet Union, India, Belgium, Sweden, Australia and Canada account for possibly 10% of the output, and the four leaders the remainder. The United States output, which ranks first, has approximately doubled from the low point of 1933, reaching 452,400 short tons in 1936, which is still 25-30% below the pre-depression level. About 64% of the output is sold as granules and flour, 30% as roofing slate, 6% as structural and sanitary slabs, flagstones, blackboards, electrical switchboards and insulation, grave vaults, school slates, and billiard table tops. The domestic industry is practically self-contained, exports and imports being negligible. (G. A. Ro.)

**Smigly-Rydz, Edward** (1886- ), inspector-general and marshal (from Nov. 1936) of the Polish army, and since July 1936 leading citizen of the Polish State, taking rank immediately after the president; since the death of Marshal Pilsudski in 1935 has been virtually dictator of his country. In his early years he studied painting, and later took part, as a Legionnaire, in the Russo-Polish war of 1921, and was responsible for the Polish capture of Kiev. Succeeding Pilsudski in the leadership of the army, in May 1936 General Smigly-Rydz entrusted Colonel Adam Koc with the formation of a program "suited to the interests of the Polish State," and in April 1937 announced his support, and that of President Moscicki, of the consequent "National Unity" campaign. On Nov. 21 he broadcast an appeal for the unity of the nation on the basis of Colonel Koc's proposals.

**Smith, Annie Lorrain** (1854-1937), British botanist; born at Halfmorton, Dumfriesshire, Scotland, October 23. She was eminent in the field of lichenology,

## SKATING—SNOWDEN, PHILIP

having written the second volume (1911) of J. M. Crombie's *Monograph of Lichens*, and rewritten the first volume (1918). Her text-book on lichens (1921) is the most thorough and exhaustive book on this subject yet published. She contributed the article on lichens in the 14th edition of the *Encyclopædia Britannica*. She died in London, Sept. 7, 1937.

**Smith, Sir Grafton Eliot** (1871-1937), British anthropologist who held that the cradle of mankind was in the region north of the Himalayas. Born at Grafton, New South Wales, Aug. 15, 1871, he studied medicine at Sydney and Cambridge universities and successively held the chairs of anatomy at the University of Manchester, the Egyptian Government School of Medicine and the University of London. From 1913-19 he served as a member of the General Medical Council. He was a past president of the Anatomical Society of Great Britain and Ireland, of the Manchester Literary and Philosophical Society and of the anthropological section of the British Association for the Advancement of Science. The Royal Society and the Royal College of Surgeons awarded him gold medals. In such books as *The Ancient Egyptians* (1911), *The Royal Mummies* (1912), and *Tutankhamen* (1923), Sir Grafton set forth his views on the culture of ancient Egypt. His anthropological studies included *Migrations of Early Culture* (1915), *The Evolution of Man* (1924), *The Search for Man's Ancestors* (1931), *In the Beginning* (1932), and *The Diffusion of Culture* (1933). He was knighted in 1934 and died in London, Jan. 1, 1937.

**Smith College.** In 1937 Smith college, Northampton, Mass., added to its equipment two new dormitories, completing the plan which makes possible the housing on the campus of all undergraduates who do not live in their own homes. There are now 36 dormitories with a capacity of 1,933 beds. The college has continued to develop the Junior Year Abroad, and for some time has been sending students for their junior year to France, Italy, Germany, and Spain. On account of the civil war, the students specializing in Spanish have gone to Mexico this year. An addition to the library has been built to shelve 250,000 additional volumes. It contains also working quarters for the library staff, studies for thirty members of the faculty, a treasure room, a room for archives, twelve seminar rooms, a hundred carrels for individual study, a social room for the faculty, a new book room, and a small chapel. The library now contains about 250,000 volumes. The physical education department has instituted a graduate course designed for students who intend to teach this subject. (W. A. N.)

**Smyth, Herbert Weir** (1857-1937), American professor of Greek at Harvard university, died at Bar Harbor, Me., July 16, 1937. For particulars regarding his career, see the *Encyclopædia Britannica*, vol. 20, p. 848.

**Snooker:** see BILLIARDS: Great Britain.

**Snowden, Philip Snowden,** 1ST VISCOUNT, of Ickornshaw (1864-1937), British statesman; born at Cowling, Yorks., July 18. Snowden remained chancellor of the exchequer on the formation of the National Government in 1931, and after the general election of that year, was created a viscount and remained in the cabinet as lord privy seal until Sept. 1932, when he resigned owing to his disagreement with the Government's tariffs policy. Lord Snowden's subsequent speeches in the House of Lords were characterized by the bitterness of his criticisms of the Government, and particularly of Mr. Ramsay MacDonald. His later publications included *An Auto-*



*biography* (2 vols., 1864–1932), 1934. He died at Tilford, Surrey, May 15, 1937. The peerage became extinct at his death. For a biographical notice, see *Encyclopædia Britannica*, vol. 20, p. 856.

**Soap, Perfumery and Cosmetics.** The development of the toilet preparations industry during 1937 has been chiefly remarkable in the province of cosmetics. Thus, modern face powders are no longer produced by the simple but antiquated mixing process, but are scientifically blended in centrifugal screening and sifting machines. Likewise, beauty milks and creams may be perfectly dispersed and stabilized by means of colloid mills and homogenizers. Petroleum derivatives, though cheap, are beginning to lose some of their popularity to oils of animal and vegetable origin. Preparations that have but recently come to the fore include foam baths, soapless shampoos, and the group of hormone and vitamin creams, etc., known collectively as “biological” preparations.

Chemically, the most important feature of the year has been the controversy over vitamin F (isomeric linoleic acid), known to the trade as the “skin vitamin.” Many scientific workers have expressed doubt as to the desirability of terming this body a vitamin. Others have upheld the use of the term. From the practical point of view, the question of nomenclature is of minor importance. Though inconclusive, the opinion of manufacturers who have already used vitamin F seems on the whole to be favourable, especially where it has been employed in association with other actual skin ingredients, namely, lecithin and cholesterol.

Technical improvements in soap manufacture relate in the main to the production of better-quality soap flakes and soap powders—products that, owing to their convenience and ready solubility, are steadily replacing the older bar soaps.

The most notable feature in the manufacture of perfumery and toilet waters is the increasing use of synthetic chemicals, as opposed to flower oils and other natural materials. Undoubtedly the chief developments over the past year are the synthesis of jasmone (characteristic constituent of natural jasmine), and the widespread use in high-grade perfumes of “heady” products of the cyclopentadecanone series.

On the business side, the chief event in the U.S.A. has been the increase of Federal control, prohibiting false advertising and unfounded claims. In Great Britain the soap makers’ association and the perfumery, etc., section of the London chamber of commerce have made good headway in meeting trade problems.

The leading world producers of soaps, perfumes, and cosmetics are U.S.A., Great Britain, France, and Germany. The industry is fast developing in South Africa, Canada, and Australia. Official production statistics are as follows: U.S.A.; \$308,000,000; Great Britain, \$131,275,000; while the total amount actually spent by the public on hair waving, beauty treatment, toilet preparations, etc., is approximately four or five times as much as these figures indicate. (F. V. W.)

**Soccer.** New York Americans triumphed in the concluding series of the national challenge cup competition to become soccer champions of the U.S. Football Association for the 1936–37 season. After dropping the first game to the Shamrocks at St. Louis, 1–0, the Americans gained a 4–2 victory at New York to win the two-game total-goal series by the combined score of 4 to 3. Approximately 5,100 were in attendance at St. Louis and a capacity crowd of 6,000 in New York. In the Eastern final the Americans were beaten, 2–0, by the Brooklyn Hispanos, but on their own field the New Yorkers won, 3–0, to take the round by 3–2. The Shamrocks defeated the Chicago Spartas, 3–1, in the first game of the Western final at St. Louis, and as neither team was able to score at Chicago the total for

the two games remained at those figures. Trenton Highlanders, Eastern regional champions, won the National Amateur Cup defeating Castle Shannon, 1–0, in the deciding game at Pittsburgh, Pa. There was a slight increase in the number of colleges playing soccer, and there seems to be a definite trend toward improvement in playing skill. (See also FOOTBALL: *Great Britain*.) (J. B. P.)

**Social Credit** was adopted by Mr. William Aberhart, Premier of the Province of Alberta, Canada, from the monetary theories of Major C. H. Douglas, who claims that business crises are caused by lack of purchasing power (money). Under the proposed Alberta social credit plan, this deficiency of purchasing power is to be remedied by issuing to each citizen a “basic dividend” of \$25 per month in non-negotiable certificates. These certificates are blank forms to be filled out by a debtor in favour of a creditor; the recipient must then deposit the certificate with a bank or Provincial credit house, where the amount of the certificate is placed to his credit. The natural resources of the Province, called “Cultural Heritage” are the credit on which these certificates are to be issued.

A price control system is to be introduced to fix a “just” price at which goods and services are sold together with a turnover tax. For example, it is suggested that the just price for wheat should be sixty cents a bushel to the grower. A tax of five cents would be levied on each bushel at the time of sale. When the grain is converted into flour an additional tax, and when the flour is made into bread still another tax. In this way it is hoped to recover the amount paid out in basic dividends.

Up to Jan. 1, 1938 the plan had not been put in operation. An attempt to issue scrip called “Velocity” dollars has also been abandoned. (See also ABERHART, WILLIAM; ALBERTA.) (J. T. C.)

**Socialism.** The Socialist movement in the United States and Europe in 1937 gave much attention to means of combatting trends toward fascism and war in their respective countries and in the world at large.

In the United States, the Socialist party actively participated in the movement for the formation of State and national labour and farmer-labour parties and in trade union organization campaign. At the party’s Chicago convention in late March, the delegates present, in their labour party resolution, declared that “the great awakening of the workers requires as its logical next step the definite development of independent working class political action” and instructed party members “to give all possible support to the proper formation of such a party on a national scale.” They urged vigorous support for the industrial union policy of the C.I.O., while appealing for unity in the ranks of labour. They outlined a program for avoiding war and maintaining civil liberties, for aiding the Spanish Government, improving agriculture and building consumers’ co-operatives.

Members of the Socialist party took a leading part during 1937 in the Wisconsin Farmer-Labor Political Federation and in the campaign in behalf of a labour slate in Detroit and other cities. In New York city the Socialist party supported numerous independent candidates of the American Labor Party in the fall elections.

The Social Democratic Federation, a Right Wing Socialist organization, held a convention in Pittsburgh in May, 1937 and adopted a program of organization and action. In the November elections, the chairman of the Federation, Jasper McLevy, was re-elected mayor of Bridgeport, Conn., by a vote of 28,526 to 8,969 for his nearest opponent.

In England, the British Labour party began its year’s activity with the issuance of a new manifesto, “Labour’s Immediate Pro-



gram," which included demands for social legislation and the nationalization of banking, coal, power and transport. The party during the year, under the leadership of Herbert Morrison, won sweeping victories in London and in other municipalities. As a result of the November municipal elections, Labour became the major party in 57 of the 130 large town councils of the country. At its October Congress, the Labour party voted not to oppose the government's rearmament program, reversing its former stand. It reaffirmed its solidarity with the Loyalist government in Spain, and increased the representation of the branches of the Labour party on the Executive Committee from 5 to 7. George Dallas was elected the chairman of the Executive. Stafford Cripps and Harold J. Laski were elected to the Executive as the additional representatives of the party branches.

On the continent of Europe the government of Léon Blum, leader of the French Socialist party, came to an end on June 21, following the refusal of the Senate to give the premier full power to handle the financial issue. A few days later Blum became vice-premier in the Chautemps Government. The French Socialists in November suspended unity negotiations with the Communists, as a result of a bitter attack on Socialists made by the secretary of the Communist International, Dimitrov. Many Socialists vigorously criticized the government for enforcing an embargo on war materials destined for the Spanish government.

In Spain the year was devoted primarily to resistance to the rebel forces under Gen. Franco. Caballero, the Left-Wing Socialist leader, resigned from the premiership on May 15, and was succeeded by the moderate Socialist, Juan Negrin, who organized a "win the war" cabinet. The new cabinet contained three Right-Wing Socialists, including Prieto, leader of the party, two Communists, two Catalan Leftist Republicans, one Catalan Nationalist and one Basque Nationalist. The Anarchists were excluded from participation. Much friction existed throughout the remainder of the year between the government and the General Union of Workers—the C.G.I.—of which Caballero was the general secretary. On Jan. 5, 1938, Caballero resigned that position. The new Executive adopted a program of full co-operation with the Government.

In Belgium, Emile Vandervelde, leader of the Belgian Labour party, resigned as minister of health in the Van Zeeland cabinet in early 1937 during a dispute over the government's "sharp" note to the Spanish government. Paul Spaak and Henri DeMan, leading Socialists, remained in the cabinet as foreign secretary and minister of finance. Arthur Wauters, Socialist, was appointed to Vandervelde's place. In the by-election in April, the Belgian Socialists supported Van Zeeland against his Rexist opponent.

The Finnish Social Democratic party, during the early part of the year, entered the nation's Cabinet for the first time in a decade. As the strongest party in the country, it was allotted 5 out of the 12 Cabinet seats. The Norwegian Labour party was signally successful in the municipal and rural elections of October. In Europe as a whole, the Socialist, Labour, and Social Democratic parties ended the year as the largest parties in the three Scandinavian countries—in each of which the premiers were Socialists—in France, Spain, Switzerland, Czechoslovakia, and Finland. They constituted the second largest political groups in Great Britain and Holland. (See also LABOUR PARTY; SOCIALIST PARTY.)

(H. W. L.)

**Socialist Party** entered the year 1937 numerically at low ebb but active in labour's mass organization drive, especially in the C.I.O. The party campaigned actively under the leadership of Norman Thomas and George Nelson, candidates respectively for president and vice-president, in 1936 with no expectation of holding its vote of 1932, much less

of becoming the mass labour party in the political field, the establishment of which it greatly desires. The reason for the campaign was that the party believed that under the conditions existing in America only so could the real issue, Socialism versus Capitalism be kept in the minds of the people and socialist educational work in the fullest sense of the term be carried on.

The party in 1936 lost over organizational and doctrinal issues a considerable part of its right wing. The secessionists formed the Social Democratic Federation and most of them supported Roosevelt in 1936. The party gained in 1936 and 1937 some hundreds of Trotskyists whom, however, it was obliged to expel in Sept. 1937 for disloyalty and for disruptive activities. At its conventions in 1936 and 1937 the Socialist party took a generally leftist position and especially declared its opposition to "collective security" as a possible or desirable road to peace in the capitalist-nationalist world.

American socialists are willing to co-operate with all working class groups, especially in the trade union field. But they are opposed to the Communist personal party dictatorship in Russia and Communist opportunism in America. Socialists seek to work out and to gain acceptance of terms on which they can work within genuine local and State labour parties in election campaigns while maintaining their party's identity and organization for all other work. In line with this policy the party supported the labour ticket in Detroit and had a partial electoral agreement with the American Labour party in the New York municipal election. For Great Britain see LABOUR PARTY. (See also SOCIALISM.)

(N. T.)

**Socialist Soviet Republics:** see UNION OF SOVIET SOCIALIST REPUBLICS.

**Socialized Medicine.** Socialized medicine connotes a form of medical practice in which the method of distributing medical care is made subject to the uses or influences of groups of persons, the community, or the state. The terms "social medicine," "state medicine," "public medicine," "sickness insurance," and "socialized medicine" have been used to describe certain forms of medical practice since the latter part of the 18th century. These terms, although not synonymous, have too frequently been used interchangeably by most writers.

"Social medicine" properly means study and research devoted to the interrelation of disease with social and economic conditions. In America this concept is often confused with various social actions concerned with medical practice: e.g., medical care plans for the poor or medical social work. The field of social medicine, however, has to do with the interdependence of the science and practice of medicine with social developments such as movements of population and flow of commerce.

"State medicine" pertains to the attempts of government, through salaried employees, to provide medical services directly to individuals in the general population. The only example of a national system of state medicine is in Russia where the system has not completely supplanted other forms of medical practice.

"Public medicine" includes those arrangements whereby government provides medical services to special groups of persons and undertakes activities which may be applied en masse for the protection of the health of the entire population. These latter activities are commonly designated "public health." Special groups which receive medical care under Government arrangements are: the Army and Navy; persons requiring institutional care for mental diseases, leprosy, tuberculosis, and communicable diseases; epileptics; the feeble minded; veterans with service-connected disabilities; criminals; and those who are wards of the



Government, such as Indians. The United States Public Health Service and State, municipal, and county health departments are governmental agencies which in their respective jurisdictions are concerned with educational, preventive, and enforcement measures for the protection and betterment of the public health.

"Sickness insurance," also called health insurance and social insurance, is ostensibly a method of distributing the economic burden of sickness. Primarily it does seek to relieve the financial losses from unemployment due to illness, but inevitably it has concerned itself with the management of the medical services necessary to return the sick person to employment. Under sickness insurance, the Government, or agencies authorized by the Government, collects funds by payments from individuals and by taxation to provide designated medical services. These services are rendered only to insured persons by physicians who signify their willingness to practise medicine under the conditions and payments established by the system.

"Socialized medicine" is a much broader term than any of the foregoing, and includes all methods of providing medical services whereby physicians are paid with funds collected from groups of individuals or with funds established by philanthropy or by taxation. Examples of existing arrangements of medical practice which can be considered as tending to socialize medicine are industrial medical systems; medical and hospital benefit organizations; mutual benefit associations; trade union, fraternal or lodge and group practice plans; community health associations; student health services; outpatient departments of hospitals; clinics; and medical service plans of county medical societies—all of which enable members to receive medical services without directly paying the physician or being required to pay at all.

All of the concepts of medical practice arrangements here mentioned are in contrast with the "private practice of medicine" whereby individual persons voluntarily select and pay personal physicians to render preventive and curative medical services.

Medicine, in the broad scientific sense, recognizes the existence of factors which affect health, and seeks to apply the accumulated knowledge in medicine to prevent or remove the effects of these factors. Medical knowledge is made available to individuals through many forms of medical and health facilities. The value and efficiency of these facilities are influenced greatly by methods of organization and distribution. Methods of socialization which disturb the close, direct, personal, confidential relationship between the individual and the physician of his choice, which fail to incite initiative and continued medical education for the practising physician, or which place the control of medical practice in the hands of non-medical persons all operate to lessen the quality of the service rendered. (See also UNITED STATES: *Socialized Medicine*.) (R. G. L.)

**Social Legislation:** see STATE LEGISLATION: *Social Legislation*.

**Social Security.** The varied program embodied in the Federal Social Security Act approved on Aug. 14, 1935, approached almost legislative completion in 1937. Of the many systems set up by the act only one—the old age insurance plan—requires no complementary State legislation.

With the enactment of 15 new laws early in 1937, all American States and territories placed unemployment insurance laws on the statute books. Unemployment benefits were paid during 1937 only in Wisconsin. From August, 1936 to the end of July, 1937 this State paid a total of \$1,080,000 to 52,667 unemployed workers, an average of \$20.50 to each beneficiary for the year. By November 30, \$1,887,000 were distributed among 70,000 beneficiaries. Thirty jurisdictions are due to start benefit payments

to unemployed workers in 1938.

With the enactment of seven new laws in 1937 providing assistance for the needy aged, 47 States, the District of Columbia, and the territories of Alaska and Hawaii have placed such legislation on their statute books. Only Virginia was without such a law last year. At the end of September, 1937, there were 1,469,998 old age assistance recipients as against 862,402 during September, 1936. While the average payment per recipient for the whole country that month amounted to \$18.97, the grants varied greatly in the different States. The range was from \$4.39 in Mississippi to \$40.06 in Colorado. The ratio of recipients to population also continued to vary greatly in the different States. Whereas Tennessee paid grants to only 38 persons out of every 1,000 persons 65 years of age in that State, Oklahoma was making grants in September, 1937 to 589 persons out of every 1,000 of its aged population.

The applications for social security account numbers for the Federal old age insurance system totalled over 34,500,000 by the end of September. Employer applications for identification numbers reached nearly 3,000,000 by the same period. Although it was estimated that about 320,000 persons, or their estates, would be entitled to the lump sum payments provided under the old age insurance features which pay 3½% of the wages earned since Jan. 1, 1937 by an insured person who dies or reaches the age of 65, only about 27,000, or less than 10% of the expected number made such claims by the end of September. Close to 20,000 of these claims were certified for payment by the same period. The balance in the old age reserve account in the U.S. treasury amounted to \$766,899,001.85 as of September 30.

By September, 1937, 39 measures for dependent children were approved by the Social Security Board. These systems provided assistance for 193,991 families covering 481,734 children. The average payment per family in Sept. 1937 was \$30.64 with the range in individual States from \$10.39 in Arkansas to \$57.42 in Massachusetts. Here also the ratio per population varied greatly in the different States. Whereas in South Carolina only two children out of every 1,000 under 16 years of age in the State were in receipt of benefits, the State of Maryland paid such benefits to 38 children out of every 1,000 under 16 years of age.

Plans for assistance to the blind were approved by the Social Security Board in 35 jurisdictions by September, 1937. A total of 39,028 persons were in receipt of such help at an average of \$25.87 per month. The variation here was also great. Individual average payments ranged from \$9.06 in Arkansas to \$47.74 in California. Also as against one blind person per 100,000 total population receiving aid in the State of Kansas, 106 persons per every 100,000 population were receiving such aid in Pennsylvania.

Although in 1937 there developed a great deal of criticism against many of the provisions of the Social Security Act, no changes in the act were made by Congress during that year. The chief criticisms were centred around the old age insurance plan, especially the huge reserve system contemplated. The reserves were denounced as unnecessary because a social insurance program, being radically different from a private insurance plan, does not require reserves. They were also attacked as financially unsound. The present reserve system was especially criticized as socially vicious because the funds are derived almost exclusively from direct and indirect taxation on the wage and salary earners which tends to decrease the purchasing power of the masses, thereby curtailing production, increasing unemployment and enhancing insecurity. The inadequate benefits provided during the next generation under this system were also bitterly assailed. Official recognition of the criticism of the old age insurance plan came during May when the U. S. Senate Finance Committee and the Federal Social Security Board appointed an Advisory Council,



composed of 24 representatives of labour, employers and the general public, to study the practicability and advisability of retarding the increases in the present taxes, of increasing and hastening the payment of benefits, and of either reducing or doing away with the reserve system. The Council began its studies late in 1937. For national insurance in Great Britain and Northern Ireland *see* NATIONAL INSURANCE. (See also RELIEF; SOCIAL SERVICE.) (A. EP.)

**Social Service.** The outstanding events of the year 1937 in the field of social service in the United States were connected with the implementing of the Public Assistance and Social Insurance provisions of the Federal Social Security Act and the further development of the rapidly growing public social services in the various States.

The relief needs of the people continued to be very great, and, during the late autumn and early winter, the increase in the number of unemployed created a grave situation, particularly in the urban industrial centres. The needs of the unemployed and of the so-called "unemployables" on relief were probably met less adequately than in any year since 1932. In place of the old Federal Emergency Relief Administration with its large funds for grants to the States for direct relief and work relief, Federal aid for relief was provided only through the Works Progress Administration. This work program, however, did not provide for all of the employable men and women certified by the relief authorities as "in need," and the care of the remaining "employables," in addition to the so-called "unemployables" (the acute and chronic sick, the mentally and physically incapacitated) was left to the States and minor local authorities. Since many of these local governments were unable, and some of them unwilling, to carry this burden adequately, there was a sharp reversion in many areas to the conditions that existed in 1932-33, and an increasing demand that the Federal government must not only support the work program, but that a Federal grant-in-aid for direct home assistance must also be provided.

The relief situation was mitigated by the removal of a large number of families and individuals under the three important public assistance services under the Social Security Act. Steady progress was made during the year in the adoption of the Federal program by the different States. In the forty-three States in which there were regular sessions of the State legislature, various steps were taken to provide the necessary legislation to enable States to qualify for the Federal grants-in-aid under the Social Security Act, for old age pensions, for aid to dependent children (mothers' pensions), and for aid to the needy blind (blind pensions). All of this assistance was financed jointly by the Federal and State governments, assisted, in most States, by the minor local governments. The Federal, local, and State governments together provided during the first ten months of the year 1937 approximately \$250,000,000 for old age pensions, \$48,000,000 for aid to dependent children, and \$8,700,000 for blind pensions, or, in ten months, a total of \$306,000,000 for these three forms of public assistance.

During the year, there was also further progress in the adoption by the States of three other important services provided under the Social Security Act, but administered by the U.S. Children's bureau, which was granted \$1,500,000 to assist the States in setting up proper child welfare services; \$2,800,000 to assist the States with grants for the care of crippled children, and \$3,800,000 for State grants for maternity and infant care. The new Federal Social Security program also made available \$8,000,000 for additional services by the U.S. Public Health Service.

In 18 different States, statutes were passed providing for some reorganization of the State welfare departments; and, in addition,

various other States provided for some changes in the methods of administration of the welfare program. In New York, some important legislation of the preceding year was in process of being implemented, and on July 1, 1937, the Temporary Emergency Relief Administration, which had been in charge of New York State relief funds since September, 1931, ceased to exist as an independent administrative organization and was merged with the New York Department of Social Welfare.

Other important results of the legislative grist of 1937 in the field of social service include the new Michigan State Department of Public Assistance, the Missouri State Social Security Commission, and, most important of all, the important reorganization of the public welfare services in the State of Washington, in which a central State authority was given charge of the whole social service program, including unemployment insurance, the employment service, public assistance (relief), as well as the traditional welfare services, such as old age pensions, blind pensions, and the child welfare services, including aid to dependent children (mothers' pensions). In the state of Pennsylvania, the old poor boards representing the old type of "pauper" relief administration, were abolished by statute and a new State Department of Public Assistance created.

The President transmitted to Congress in February, 1937, the report of his committee on Administrative Management in the Government of the United States (re-organization of the executive departments), which recommended a new Federal department of social welfare. Although bills were introduced in both the Senate and the House of Representatives to carry out this recommendation, no final action was taken by the Congress. (See also SOCIAL SECURITY.) (E. AB.)

**Great Britain.**—More than £500,000,000 are spent annually in Great Britain on what are described as social services, but this total may be misleading, as it includes the cost of such services as unemployment insurance, housing, and poor relief. It is probable that what are usually regarded as charitable social services, such as the care of cripples, the deaf, the dumb, the blind, and the aged, cost more than £150 millions. The Board of Education keeps a strict control on the curricula and training of all special schools, whether maintained by public funds or by voluntary organizations dependent for their finances on public subscriptions. The board's latest report shows that there were in mid-1937 71 schools of various types for 4,585 blind children; 47 schools and training establishments for 4,544 deaf children; 160 for 16,542 mentally defective children; and 612 for 58,369 physically defectives, including cripples. Training in these schools usually ceases at the age of 16, but there has been a consistent development of institutions for the training and employment of the blind after leaving school, and in most cases these institutes are helped financially by local authorities. Blind persons are entitled to an old-age pension at the age of 50, but it is planned to reduce this age to 40 within the next year, because of the difficulty of training. At the end of 1937, there were 69,378 blind persons in England and Wales; about 26,000 are in receipt of old-age pensions at a cost to the State of £650,000 annually.

One of the most rapidly developing social services in Britain is the provision of open spaces and playing fields in and around crowded areas. Loans amounting to £3,196,002 were sanctioned by the Ministry of Health in 1936-37 for public parks, recreation grounds, and playing fields, including £1,952,270 for the purchase of land. The corresponding figures for 1935-36 were £2,467,245 and £1,109,889. The area purchased in 1936-37 was 9,059ac.; in 1935-36 4,732 acres. In addition 3,570ac. were acquired under the Local Government Acts for the benefit, improvement, and development of towns at a cost of £736,096. More than 500ac. were presented during the year to local authorities for the National





**STEALING THIRD BASE** in a girls' match game of softball, which now has 3,000,000 players in the U. S.

Playing Fields' Association. Further progress has been made with the reservation of recreation areas, and a "Green Belt" around London. The London County Council, under its scheme for assisting other councils purchasing land for this purpose, has approved areas amounting to approximately 35,000ac., and made provisional offers of assistance amounting to nearly £2,000,000.

State and municipal aid have been given to housing. The number of houses built since the Armistice up to March 31, 1937, was 3,328,398, of which 932,824 were built by local authorities, 423,723 by private enterprise with State assistance, and 1,971,851 by private enterprise without assistance. The total figure of houses built since the War represents the rehousing of roughly one-third of the population of England and Wales.

In both slum clearance and overcrowding, the local authorities have been helped by voluntary housing associations, who receive Exchequer subsidies. Thirty-three housing associations have been responsible for the building of 3,695 houses, mainly in the Greater London area. (VI. BR.)

**Societies:** see under specific name.

**Society of Glass Technology:** see GLASS.

**Socotra:** see ADEN.



**A SHARP LINE DIVIDES** the productive, properly used land on the left from the tract on the right where preventable erosion has been allowed to ruin the land

**Softball**, an outdoor game that is really a "take-off" on America's national game, baseball, experienced an amazing growth during 1937. Played on a smaller diamond, using a larger but soft ball and a smaller bat, the ball is pitched underhand instead of overhand. Ever since the Amateur Softball Association of America was formed five years ago, the game has spread rapidly and many sectional leagues have been formed.

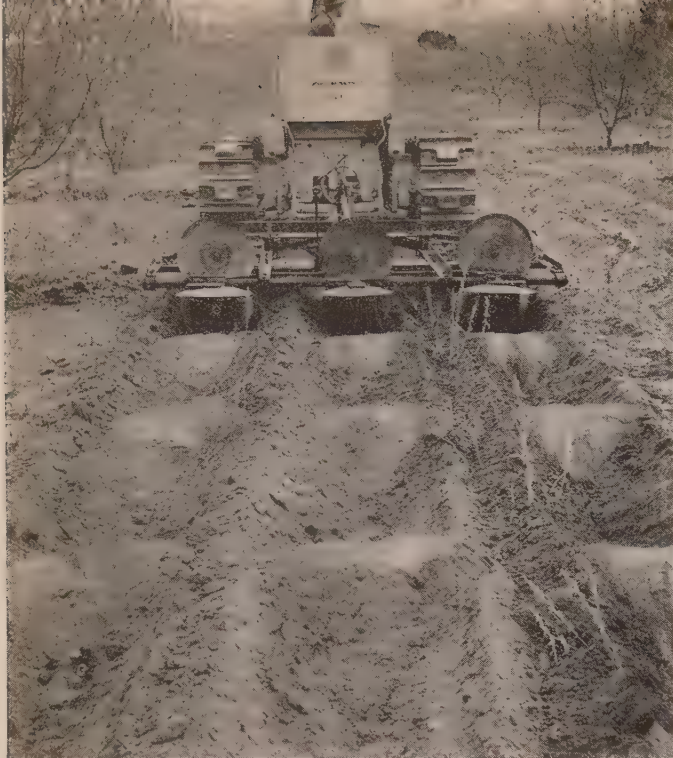
Thousands of teams in every State battled for the chance to compete in the world series at Soldiers Field, Chicago, with 84 championship teams representing 43 States, and Canada competing. In the finals, the victorious Briggs Body team of Detroit, Mich., defeated the B & B Clothes team of Sapulpa, Okla., 1-0, in a thrilling championship tournament, before more than 25,000 spectators, thus winning possession of the \$1,000 William Randolph Hearst trophy for 1937.

The women's softball championship team representing the National Screw and Manufacturing Co., of Cleveland, Ohio, was considered to be the leading feminine club in the tournament. It played through the series to down the Rayls of Detroit, 6-1, establishing a repeat victory, the first in the history of either the men's or women's divisions. Of many city championship contests held all over the U.S., one of the most exciting was the game played for the title of St. Louis, Mo., which was won by the Navy Post team of the American Legion. The softball team of the New York Athletic Club was one of the leaders. (J. B. P.)

## Soil Erosion and Soil Conservation.

Soil conservation and the prevention of erosion is becoming a matter of public concern in many countries of the world. Although scientists had been studying the matter of soil deterioration for many years, and admonishing their countrymen against the evil day when it would be too late to take remedial action, scant attention was given to the warning by people generally while land was plentiful and expansion seemed unlimited. Then, too, because of well-distributed rainfall, infrequency of torrential rains, and careful husbandry, soil erosion is not now and never has been a critical problem in Western Europe, until recently the seat of leadership in agricultural science, except in parts of Italy and Spain, and a few other localities such as those lands in the valley of the Rhine used for crops under the protection of walled terraces.





A SPECIALLY-DESIGNED LISTER that plows furrows, with dams at intervals of every four feet, to conserve rainfall

Public consciousness in the more spectacular phase of the problem, soil erosion, began to awaken in the United States, Canada, Australia, and elsewhere about 1925. In America, the recent dust storms associated with the unprecedented drought in the American plains along with severe floods in the Ohio and Mississippi basins, served to bring the associated problems of rural land-use and flood control into still sharper focus during the past three years. Outside of Britain itself, erosion is more or less a problem throughout the British Empire, varying in kind and degree. In Australia wind does the greatest damage, while in Northern India water erosion is serious. In many of the individual States, special governmental committees have been appointed for dealing with the problem through reforestation, controlled grazing, fire protection, and especially through emphasis on good husbandry.

In the United States during 1937 soil erosion, on the whole, has likely been less severe than in the previous few years, due to better distribution of rainfall in both humid and semi-arid regions and to important public measures taken to improve agricultural practices and prevent erosion. In the Soviet Union the problem is receiving much more attention than formerly, but no comprehensive reports are available as to its relative seriousness and extent. Reports from South Africa, East Africa, Ceylon, Northern India, and some other areas leave the impression that the problem is becoming increasingly serious. In these countries an increasing population, coupled with increased pressure for crop production without a corresponding improvement in husbandry, is leading to increased erosion. China has already suffered from this sequence of circumstances, especially in the northern loessial areas.

Probably the United States has taken more tangible steps toward the control of soil erosion than most other countries. The Department of Agriculture has greatly increased its efforts in calling the attention of its citizens to the problem, in conducting demonstrations on a small watershed basis in several parts of the country, and in developing a system of subsidies for those farmers practising good husbandry. One additional Federal agency, the Tennessee Valley Authority, is making a co-ordinated attack on the whole problem of water and land conservation in a great watershed.

## SOLDIERS' BONUS—SOMALILAND

The most significant trend in dealing with the problem is the development of techniques for co-operation, first among the people on the land, and then between these people and the research and administrative agencies of the State dealing with the land. Since many of the fundamental causes of soil deterioration are due to economic and social conditions, the solution of the problem calls for economic adjustments as much as for physical improvements in husbandry. Soil erosion is an evidence, rather than a cause, of a lack of adjustment between the people and the land. In many instances farmers and ranchers cannot improve their practices without help and especially without the incentive associated with security of tenure.

During the years since the World War, a good deal of useful legislation has been enacted in several countries in order to enable farmers to adopt better practices and to safeguard the State's interest in the land and its productivity. Some of this legislation is definitely experimental and different countries, having different soils and unique problems, will need special laws. Much more can be done. Some people in the countries where erosion is serious feel that compulsory measures may be necessary to force occupiers of the land to protect it. On the whole, however, it is felt that the erosion problem needs more clarification through research before detailed regulation is attempted. These trends are emphasized in reports from all parts of the world.

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**Soldiers' Bonus:** see ADJUSTED COMPENSATION.

**Solomon Islands:** see PACIFIC ISLANDS, BRITISH.

**Somaliland, British.** A British protectorate in east Africa, bounded N. by the Gulf of Aden, and marching with Italian Somaliland, Ethiopia, and French Somaliland. The governor is Major Sir A. S. Lawrence, K.B.E., C.M.G., D.S.O.; and the capital is Berbera, the governor's seat being at Sheikh. The area is c. 68,000 sq.mi., and the population c. 344,700, of whom (1931 census) 68 were Europeans. The religion is Mohammedan. The Somalis have in the past opposed secular education. Small grants have been made to Koranic schools, and there is one government elementary school in Berbera.

On Jan. 27, 1937, an agreement was signed in Rome between Great Britain and Italy settling various matters affecting the interests of the two countries in their respective areas in

SOIL OF THIS SLOPING FIELD did not wash away because the basin-listed furrows, plowed on contour, held the water until it could be absorbed





Somaliland, including the organization of transit traffic and tribal grazing and watering rights in Italian territory.

There is a weekly steamer service from Aden. There are no railways, and the 2,000 mi. of roads are liable to become impassable in certain seasons. There is a telegraph system, and 5 wireless stations. In 1936, 1,301,419 hides and skins of sheep and goats were exported, and 11,938 cwt. of gum and resin. Total exports for 1936 were Rs. 2,605,596, and imports Rs. 5,669,801. Banking business is conducted through an Aden branch of Messrs. Cowasjee Dinshaw Bros., and the currency is the Indian rupee. Revenue and expenditure for 1936 were £164,536 and £207,190 respectively.

**Somaliland, French,** is a French colony on the east coast of Africa, lying between Eritrea and British Somaliland. Area c. 8,490 sq. mi.; population c. 70,000, including 700 Europeans. Capital, Jibuti. The railway from Jibuti to Addis Ababa has increased considerably in importance as the result of the Italian annexation of Abyssinia, for the Italian troops have largely depended for their existence upon transport on this line. A provisional agreement was reached between the French railway company and the Italian administration on the subject of transport tariffs. The Italians are trying to find other methods of penetration, whether by road or by rail; but Jibuti remains the natural outlet for Abyssinia, and its importance continues to increase.

**Somaliland, Italian,** a coastal strip of N.E. Africa, on the Gulf of Aden (N.) and the Indian ocean (E.), backed by British Somaliland, Ethiopia, and Kenya, and now forming part of Italian East Africa (*q.v.*): area, about 195,800 sq. mi.; pop. (1931) 1,021,570, including 1,670 Europeans. Mogadiscio is the capital and seat of the governor.

The chief products are oil, gum, hides, kapok, sugar, cotton, and ivory, and the colony is the source of half the world's supply of incense; bananas and maize are also grown. In 1934 imports amounted to 59,190,960 lire and exports to 30,290,390; in 1935-36 the budget balanced at 70,750,000 lire. A severe drought in 1937 followed by a plague of locusts added to existing difficulties caused by the Italian occupation of Ethiopia, and brought about a shortage of food, clothing, and other supplies.

**Somervell, Sir Arthur** (1863-1937), British musical composer; born at Windermere, June 5. He was educated at Uppingham, and at King's college, Cambridge, where he took his Mus.D. in 1904. From 1894 to 1901 he taught at the Royal college of music, and afterwards became an inspector, and ultimately chief inspector, of music to the Board of Education. He was knighted in 1929. He was known chiefly for his songs, and notably for settings of lyrics from *Maud* and *The Shropshire Lad*; but his cantata, *The Forsaken Merman*, and his symphony in D minor, *Thalassa*, are among his more ambitious work which holds the attention of music-lovers. He died May 2, 1937.

**Songs, Popular.** The popular song, now recognized as the modern representative of primitive folk-music, has shown several interesting developments during 1937. The type of interpretation known as "swing" is treated elsewhere. (*See JAZZ.*) Aside from this immensely popular form of arrangement, it has been proved that popular songs could reach an enormous public without any assistance from films or stage productions (although inevitably associated with radio), that foreign importations could win as great a success in America as the native product, and finally that the novice now has greater opportunities

in the field of song-writing than ever before.

Of the fifteen leading popular songs of 1937, judged entirely by the sales of sheet music, only one was a "production number," *Little Old Lady*, the contribution of Hoagey Carmichael and Stanley Adams to the musical show, *At Home Abroad*. Three appeared in films, *September in the Rain*, *Moonlight and Shadows*, and *That Old Feeling*. The rest were all independently published and made their way through the various "plugs" originating in the legendary Tin Pan Alley and through the honest enthusiasm of the average listener.

The biggest sellers were *When My Dreamboat Comes Home*, a simple arrangement of the bugle tones, suggesting both *Taps* and the *Pilgrims' Chorus*, and Billy Hill's *Chapel in the Moonlight*, a variant of the rhythmic pattern already popularized by Franz Lehar in *My Little Nest of Heavenly Blue*. Both of these came close to the half million mark, which is now considered the limit for any popular song, as compared with sales of over two million in the past.

The rest of the "first fifteen" were *Boo Hoo, It Looks Like Rain*, *Sailboat in the Moonlight*, *So Rare*, *Harbor Lights*, *My Cabin of Dreams*, *You Can't Stop Me from Dreaming*, *Once in a While* and *Vieni, Vieni*. Of these the last named came directly from an Italian folk-song, with echoes of Verdi's *La Donna e Mobile* while *Harbor Lights* was imported from England. Another successful importation was *Serenade in the Night*, also of Italian origin.

Three of the hit songs, *So Rare*, *Cabin of Dreams* and *Once in a While*, introduced such new names as Jack Sharp, Jerry Herst, Al Frazzini, Nat Madison and Michael Edwards. Publishers in general have shown a tendency to give the amateur song-writer a chance, even to the extent of approving a clearing-house for such material and thus eliminating the traditional accusation that Tin Pan Alley is a "closed corporation."

The screen definitely made a success of *Sweet Leilani*, written by Harry Owens of Honolulu, and appearing in the film, *Waikiki Wedding*. In many cases a good song helped a motion picture rather than vice versa. Radio continued its frank admission that commercial programs are absolutely dependent on new popular songs, while the publishers took advantage of such quick publicity, even at the expense of a longer life and a wider sale of sheet music.

Dances like the "Big Apple" flourished, with a variety of music, and there was a strong movement toward the revival and re-arrangement of established folk-music. An outstanding novelty song was *The Merry-go-round Broke Down*, following the lead of the *Organ Grinder's Swing*. At the close of the year, the Yiddish *Bei mir bist du schoen* leaped into an instantaneous success. Its composer, Sholom Secunda, sold his tune outright for \$15. (S. SP.)

**South Africa, The Union of.** This self-governing dominion of the British Commonwealth of Nations extends from the southernmost point of the African continent to the course of the Limpopo, with the exception of the territories of Basutoland, Swaziland, and Bechuanaland, which remain under direct administration by Great Britain. The former German colony of South West Africa is administered by the Union under League of Nations mandate. There are in effect two capitals: the seat of government being at Pretoria, and that of the legislature at Capetown. The ruler is King George VI represented by a governor-general, Sir Patrick Duncan. The national flag is orange, white, and blue in horizontal stripes, the white stripe having in its centre the Union Jack and the flags of the Transvaal and the Orange Free State.

**Area and Population.**—The combined area of the four prov-



inces of the Union (Cape of Good Hope, Natal, Transvaal, and Orange Free State), including Walvis Bay, which is administered by South West Africa, is 472,550 square miles. The population is 9,588,665 (1936 census), made up of 2,003,512 Europeans, 6,597,241 Bantu, 219,928 Asiatics, and 767,984 coloured folk. The Dutch Reformed Churches can claim 49.61% of the European and 5% of the Bantu population; Anglicans, 18.57% Europeans and 8.77% Bantu; Presbyterians 4.74% Europeans and 2% Bantu; Methodists 6.28% Europeans and 13.5% Bantu; and 4.28% of the Europeans are Jews.

South Africa is officially bi-lingual, all important papers being printed in both Afrikaans and English, and both languages being taught in the schools. The most important of the native languages are Seyosa, Zulu, Sesuto, and Sechuana. Primary education is under the control of the provincial administrations, and is free and compulsory for Europeans. There are the following universities and university colleges: the University of South Africa, with constituent colleges at Potchefstroom, Bloemfontein, Grahams-town, Wellington, and Pietermaritzburg; and the Universities of Capetown, Stellenbosch, Witwatersrand, and Pretoria. There is also a number of State technical and agricultural colleges. Education for Bantu is entirely supplied by State-aided missions. Higher education is the direct concern of the Union Department of Education. Fort Har, the native university college, prepares students for the degrees of the University of South Africa, on whose senate it is represented.

The leading cities, with 1936 population figures, are: Johannesburg 519,268; Capetown 335,371; Durban 259,647; Pretoria 128,636; and Port Elizabeth 109,824.

**History.**—Sir Patrick Duncan, successor to the earl of Clarendon as governor-general, assumed office on April 5, 1937. A bill to abolish appeals to the Privy Council, promoted by the Nationalist Party, was defeated in January. Three by-elections took place during the year, at Yeoville, Vrededorp, and Klerksdorp, but no change in party representation occurred, the first and third being won by the United Party, the second by the Nationalists. In June the first purely native elections took place in the Cape province, three new and additional members (one a woman) being elected to the House of Assembly to represent the native voters under the provisions of the new Native Representation Act. The Natives Representation Council, an advisory body which is to consider all proposed native legislation and all estimates of income and expenditure affecting natives before they are placed before the Union parliament, composed of 15 elected members, with the five chief Native Commissioners and the secretary for Native Affairs, met for the first time in December. The defence plans of the Union received much attention during 1937; the year witnessed the inauguration of a scheme to train 1,000 air pilots in five years, and in February it was announced that 100 military aeroplanes were to be supplied to the Union by the British Government. The Union Government signed a contract with Imperial Chemical Industries, Ltd. to build a factory at Pretoria capable of supplying 10,000,000 rounds of ammunition annually, and a scheme for making the Union self-sufficient regarding armament supplies was examined. A national physical training scheme, with 300 to 400 trained instructors, is under consideration. The proposal to transfer to the Union the native protectorates of Basutoland, Bechuanaland and Swaziland came to the front after Gen. Hertzog's visit to England for the coronation: after suggesting that Britain was neglecting the Union's rights, it was realised that there had been a misunderstanding with the Home Government, and in October Gen. Hertzog announced that he had recently received a communication from the British Government bearing out his view that the transfer would shortly be effected. On July 1, on the inauguration

of the new Imperial Airways flying-boat mail service from Southampton to Durban, the Union Government started a new air mail system intended to carry all inland letter mails by air as far as possible, and including a daily service from Johannesburg to Capetown.

**Trade and Communications.**—The most important agricultural exports are maize, citrus and soft fruits, hides and skins, wool, and mohair. Wool exports for 1937 showed an increase in value of about £3,000,000 over the figures for 1936; fruit exports also rose, amounting to c. £4,000,000; and maize was exported to the value of £3,000,000, compared with £60,000 in 1936. Gold is the most important product; and the total production in the Transvaal for 1937 was 11,740,891oz., compared with 11,336,214oz. in 1936.

The production of diamonds in 1936 was, in carats, 339,718 (mined) and 284,204 (alluvial). The total value in sterling of imports and exports during 1936 are shown as follows:

<i>Imports</i>		<i>Exports</i>	
Merchandise . . . .	£81,099,318	Produce . . . . .	£109,497,485
Government . . . .	5,182,748	Re-exported. . . .	1,888,241
Specie . . . . .	22,018	Through Post . . .	134,769
	£86,304,084	Ships Stores—	
		produce . . . . .	1,188,730
		Re-exported. . . .	179,889
		Specie . . . . .	1,645,002
			£114,534,116

For the first six months of 1937, imports were £49,115,515 and exports £58,785,040, as compared with £40,902,745 and £59,235,247 for the corresponding period of 1936. Estimated 1937 figures for total imports and exports are £103,000,000 and £125,000,000 respectively.

The railways are owned and managed by the South African Government. They are efficient, and there are few areas which they do not touch. Many of the gradients are astonishing. There are some electrified lines, particularly in the suburbs of Capetown and Johannesburg and on the heavy gradients of central Natal, and extension of electrification is contemplated. At the end of March 1937 there were 13,213mi. of railway, of which 884mi. were 2ft. gauge, and the remainder 3ft. 6 in. There is through communication from Capetown to Port Francqui in the Congo. Main roads are well maintained and of good surface, but local roads are rough and often impassable at certain seasons.

On April 1, 1936, South African Airways took over the services south of Germiston formerly operated by Imperial Airways; and in June and July 1937, coincidentally with the introduction of an Imperial Airways flying boat service terminating at Durban, South African Airways took over the route from Germiston to Lusaka and finally to Kisumu, on Lake Victoria. There are also six local routes operated by South African airways: Rand-Durban daily, Durban-Capetown twice weekly, Rand-Capetown via Kimberley twice weekly, Rand-Port Elizabeth via Bloemfontein weekly, Rand-Windboek via Kimberley twice weekly, and Rand-Kisumu weekly.

Telephone communication is possible between all the large centres, and further extension of long distance lines is being considered. Farm lines are increasing, and in 1936, 15,714 farmers were served. There were altogether 1,449 exchanges in 1936.

**Finance and Banking.**—The Union mints its own currency, which is identical in denomination and value with that of the United Kingdom. Revenue and expenditure estimates for the financial year 1937–38 are £42,550,000 and £37,550,000 respectively. The income tax for individuals is graduated from 1s. to 2s. in the £; for gold-mining companies it is 3s. in the £, and for other companies 2s. 6d. There is a poll-tax on natives at a rate of £1 a head, and in addition a local tax of 10s. per hut up to £2 on all owners of huts in native Reserves.



The most important of the banks are the Government Reserve Bank, the Standard Bank of South Africa, and Barclay's Bank (Dominions, Colonial and Overseas).

**Defence.**—The Union Government is entirely responsible for the land defences of its territory. Every citizen is liable to a period of military training between the ages of 17 and 25, and a minimum of 50% of those of age are called upon. The Union defence force is a permanent force consisting of seven military commands under a Council of Defence. There is also a military college. The South African air force is of considerable strength, with two bases at Roberts Heights near Pretoria, and at Cape-town. A new system of training pupil-pilots for inclusion in the Defence Force Reserve of Pilots has lately been instituted. Pupils do non-continuous training at private aerodromes or clubs and continuous training at the training school at Roberts Heights. A small subsidy is paid by the Government towards the training of such pilots. The naval defences of the Union are the responsibility of the British navy, which maintains a station and dock-yards at Simon's Town in the Cape Province. There is also a South African division of the Royal Naval Reserve, which embraces citizens liable for service who elect to perform naval service. The Citizen Force Reserve consists of citizens who have performed their peace training. Union expenditure on defence in 1936 was £1,155,198.

**BIBLIOGRAPHY.**—E. A. Walker, *History of South Africa*, new edition, 1935; *Smuts*, By Sarah Gertrude Millin, 1936; *Africa Emergent*, W. M. Macmillan, 1938; *The Cambridge History of the British Empire*, vol. VIII. (W. M. Ma.)

**South Australia**, a State of the Australian Commonwealth, 380,070 sq.mi. in area, bounded by longitudes 129° E. and 141° E., and by latitude 26° S. and the southern coast of the continent. The State governor, representing H. M. King George VI, is Major-Gen. Sir Winston Duggan, K.C.M.G. Population (1937) 588,395, forming 8.6% of the population of Australia. Capital, Adelaide: population (1936) 316,878, including suburbs. The premier of a Liberal government is Mr. R. L. Butler.

**History.**—Parliament was opened by the governor on July 27, 1937. Among the measures passed during the year was an amendment to the State constitution prolonging the term of parliaments from three to five years, and consequently providing for the election of members of the legislative council for 10 instead of 6 years. Other bills presented to parliament provided for the establishment of a Milk Marketing Board, the application of tests to new drivers before the issue of car-driving licences, and the ratification of an agreement between the Government and the Broken Hill Proprietary Co. for the construction of a large iron-works at Whyalla.

The Mount Bold reservoir, with a total capacity of 6,662 million gallons and a height of dam of 147ft., was completed during 1937. The Municipal Tramways Trust inaugurated an experimental system of trolley-buses. A betting commission was appointed with wide terms of reference; in 1936-37 the betting turnover in the State, apart from totalizator betting, was over £7 millions, of which only £1.7 millions was laid on the course.

**Trade, Industry, and Finance.**—Production in 1935-36 was valued (gross) as follows: agricultural, £11,431,418; pastoral, £5,442,737; dairying, etc., £2,688,560; forestry, fisheries, etc., £824,585; mining, £2,700,162; total, primary industry, £23,087,862 gross value, £15,147,080 net value; factory industry, £31,904,091 gross value, £11,669,705 net value. Livestock numbered (Dec. 31, 1936) 7,905,000 sheep, 328,000 cattle, 201,000 horses, and 86,000 pigs. The percentage of trade unionists unemployed in Aug. 1937 was 8.4, the number of registered unemployed in that

month being 8,209. Corresponding figures for Aug. 1936 were 10.0% and 11,109.

The 1936-37 budget yielded a surplus of £139,168, instead of an estimated deficit of £168,452. Revenue was buoyant, but expenditure also increased. Income-tax was reduced by 3d. in the pound, at a cost of £225,000, and certain small family incomes were exempt from tax. The special grant from the commonwealth had been reduced from £1,330,000 to £1,200,000 for 1937. Wage and salary increases would cost £225,000. On the other hand, considerable increases of revenue were expected from income-tax, railways, and other sources. Total revenue for 1937-38 was estimated at £12,248,632 (against £11,739,306 received in 1936-37), and total expenditure at £12,244,648 (against £11,600,138 in 1936-37). The loan works program for 1937-38 totalled £2,800,000 gross, offset by credits of £1,500,000, being chiefly repayments of advances by the State Bank (for house-building, etc.) and by the Farmers' Assistance Board. (H. V. H.)

**South Carolina** has an area of 30,989 sq.mi., including almost 500 sq.mi. of coastal waters. Population 1930, 1,738,765 of which 944,040 were white and 793,681 were Negro. Estimated population June 30, 1937, 1,875,000. The capital is Columbia with 51,581; the only larger city is Charleston with 62,265.



OLIN DEWITT JOHNSTON, governor of South Carolina

**History.**—Extensive strikes in 1935-36 caused a conservative reaction. Support of President Roosevelt's policies continued overwhelming, although many senators and the State Bar Association condemned the proposed change in the Supreme Court. Gov. Olin D. Johnston's hostility to the highway department continued, characterized by his charges of political domination by the department and the department's resting on concrete evidence of its service. The governor's demand for removal of Chief Highway Commissioner Ben M. Sawyer was answered by the new commission's electing Sawyer for his fourth consecutive four-year term. While Gov. Johnston has roused much feeling against the commission (having in 1935 seized their offices by military force, until restrained by the Supreme Court), conservatives highly value the commission's services. The State-administered highways, June 30, 1937, comprised 6,509mi. 2,418 of which were standard paved and 1,893 of which were bitumen paved, total cost (including \$9,821,645 under construction), \$117,366,108. Johnston's pardons are far fewer than those of many governors. His criticized "leaves of absence" were 393 among over 10,000 prisoners in three years.

**Education.**—A compulsory attendance law (ages 7 to 16), with basic State financial aid, a State-supported school term of eight months, and a State guarantee of minimum teachers' pay \$75 to \$90 a month, were enacted in 1937. A law of 1936 rents text books at one-third retail price. Free text books for low grades failed in an executive-legislative disagreement.

Enactments promoted soil conservation, tax exemption at certain places for new factories, housing, forest protection. Total lack of county legislative authority continued to prolong legislative session and to show the great majority of laws of local character.

**Charities and Correction.**—Inmates of State hospitals for insane (including practically all the insane) numbered 4,757, June 30, 1937. The State penitentiary contained 1,318 prisoners on the same date. Many others of all grades are on county chain gangs.



There were during the year ending June 30, 1937, 107 homicide acquittals, 231 convictions, and five electrocutions.

**Finance.**—State revenue receipts for the year ending June 30, 1937 were \$26,623,381, and non-revenue receipts (bond sales, Federal grants, etc.) \$21,412,594. The total State debt on June 30 was \$70,825,438, of which \$63,255,000 was for highways. Highway bonds are being systematically paid from the gasoline tax of six cents a gallon and the new low car license fees. Federal internal revenues from South Carolina in 1937 totalled \$7,876,563. Federal PWA expenditures in the State 1934-36 were \$16,841,369. Import duties collected in South Carolina in the year ending June 30, 1937, \$685,020.

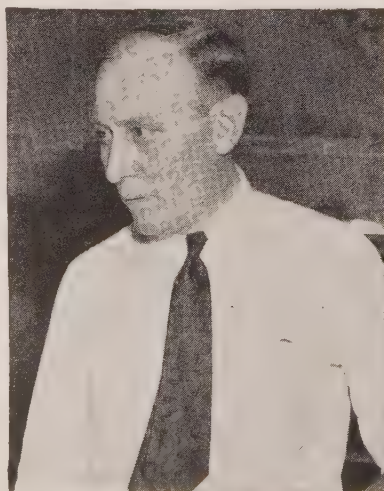
The cause of labour was strongly favoured by Gov. Johnston, a lawyer once a cotton mill operative. The department of public welfare, created in 1937, planned annual aid of \$4,500,000 to dependent children, the blind, the aged, etc., through State, county, and Federal co-operation. Unemployment compensation was enacted, 1936. Wages tended upward in the first half of 1937. Both the American Federation of Labor and the C.I.O. extended their efforts in the State, the latter at places gaining on the former. Several C.I.O. organizers were mobbed by workers. The State law forbidding women's work in mercantile establishments after 10 p.m. was judicially applied to restaurants.

**Agriculture, Manufactures.**—The proposed \$37,500,000 Santee-Cooper rivers hydro-electric-navigation project on Federal funds still hangs in the courts, although approved by the Federal District Court. The Buzzard Roost hydro-electric project for the Saluda near Greenwood gained Federal Supreme Court approval on Jan. 3, 1938. In December the State Rural Electrification Authority had 303mi. of line and 1,152 customers. Private companies have begun similar service. Crops for 1937 were 17% above 1936 (31% above the 1928-32 average); value, \$125,771,000 (5% below 1936; 46% above the 1931-35 average). Capital in all manufactures, year ending June 30, 1937, \$378,536,953; product, \$422,267,920; average employees, 132,128; wages (management omitted), \$95,026,602. (D. D. W.)

## South Dakota,

one of the East North Central States, admitted to the Union in 1889, is popularly known as the "Sunshine State." The area is 77,615 sq.mi. Population (State census, 1935), 675,082; (estimated July 1, 1937), 692,000. Capital, Pierre, population 4,013. Chief city, Sioux Falls, population, 33,644. Urban population 289,751. Rural population, including Indians, 385,931. Indian population 27,401.

**History.**—South Dakota, normally Republican, became wholly Democratic in 1934. At the elections of 1936, Republicans placed in office a governor, a lieutenant-governor, one congressman, and captured both houses of the State legislature. The leading State officials are: Leslie Jensen, R. governor; Goldie Wells, D. secretary of State; Donald McMurchie, lieutenant governor; Raymond A. Kelly, State auditor; W. H. Hinselman, State treasurer; and Clair Roddewig, attorney general. The chief legislative act in the year was a system of old age pensions. In the election of 1936 five consti-



LESLIE JENSEN, governor of South Dakota

tutional amendments prevailed aiming to remove educational officers from politics and taking off limitation of terms of service; increasing liability of stockholders for losses in banks; limiting State indebtedness to .5% of assessed valuation; reducing membership of senate to 35 and house to 75 members.

**Statistics.**—The school census for 1937 showed a loss of 7,803 pupils, perhaps due to crop failures. On June 30, 1937, the State debt was \$41,208,230, a reduction of \$1,702,671 for the fiscal year. The gold production for 1937 was \$20,026,431. The total value of crops produced in 1937 was \$66,088,000. The banking situation was greatly strengthened. Six small banks were closed and at once taken over by the FDIC for liquidation. There was no loss to the depositors.

Persistent drought and grasshopper infestation oppressed agriculture and caused perceptible movement of population from farms to towns.

Manufacturing, never commanding in the industrial field, showed a recession.

The number of out-of-State tourists who visited the Black Hills was 528,000. Establishment of manual and industrial training in the State reformatory indicated improved morale among the inmates. (D. Ro.)

**Southern Rhodesia:** *see* RHODESIA, SOUTHERN.

**South Polar Regions:** *see* ANTARCTICA; ANTARCTIC EXPLORATION; EXPLORATION AND DISCOVERY: *Antarctic Exploration.*

**South-West Africa,** territory north of the Orange river, bounded on the W. by the Atlantic, on the N. by Angola, and on the E. by the Bechuanaland Protectorate and the Cape province of the Union of South Africa; formerly a German colony, but since 1920 administered under a mandate by the Union of South Africa. Area (including Walvis bay) 318,000 sq.mi.; population 360,000 (census 1936) including 31,000 Europeans, of whom in 1937 about 9,600 spoke German in their homes. The capital is Windhoek (pop. c. 19,000). The administrator, appointed by the Union Government, is assisted by an executive committee of four, and an elected legislature of 18 members.

There are four high and secondary schools, and fifty-six other government schools, besides German private schools, with about 70 mission schools for native children. Stock-raising is the main occupation of the people. There is a considerable export trade in skins and hides, and butter is manufactured; diamonds are mined, and vanadium worked in the north. There is a direct railway line from Windhoek to Capetown; the total mileage of railways is about 1,560. All mails are carried by air. Estimated revenue and expenditure for 1936-37 were £534,000 and £856,000 respectively; imports in 1936 were valued at £1,960,000 and exports at £3,121,000. Nazi activities by ex-German inhabitants led to a proclamation on April 4, 1937, restricting the political activities of non-Britishers, and making it an offence for British subjects to give allegiance to any head of a State other than the King of Great Britain.

## Sovereigns, Presidents and Rulers.

The following list includes the names of those holding chief positions in their countries on Jan. 1, 1938.

Country	Name and Office	Accession
Afghanistan . .	Muhammad Zahir Khan, King. . . . .	1933
Albania . . . .	Zog I, King . . . . .	1928
Arabia . . . . .	Abdul Aziz al Faisal al Saud, King . . . . .	1932
Argentina . . .	Gen. Agustin P. Justo, President . . . . .	1932
Australia . . .	Lord Gowrie, of Ruthven, Governor-General . . . . .	1936
	Joseph A. Lyons, Premier	



Country	Name and Office	Accession
Austria	Dr. William Miklas, President	1928
Belgium	Karl Schuschnigg, Chancellor	
	Leopold III, King	1934
	Paul Emile Janson, Premier	
Bhutan	Yigme Wangchuk, Maharaja	1926
Bolivia	Col. Germán Busch, Provisional President	1937
Brazil	Dr. Getulio Vargas, President	1934
Bulgaria	Boris III, King	1918
	George Kiosseivanoff, Premier	
Canada	Lord Tweedsmuir, Governor-General	1935
	W. Mackenzie King, Premier	
Chile	Arturo Alessandri, President	1932
China	Lin Sen, President	1931
Colombia	Dr. Alfonso Lopez, President	1934
Costa Rica	Léon Cortés, President	1936
Cuba	Dr. Federico Laredo Bru, President	1936
	Col. Fulgencio Batista, Chief of Staff	
Czechoslovakia	Dr. Eduard Beneš, President	1935
	Milan Hodza, Premier	
Danzig	Carl Burckhardt, High Commissioner	1937
Denmark	Christian X, King	1912
Dominican Rep.	Gen. Rafael Trujillo Molina, President	1930
Ecuador	Gen. Alberto Enríquez, Provis. President	1937
Egypt	Farouk I, King	1936
	Mohamed Mahmud Pasha, Premier	
Estonia	Konstantin Päts, Pro-President	1933
Finland	Kyösti Kallio, President	1937
France	Albert Lebrun, President	1932
	Camille Chautemps, Premier	
Germany	Adolf Hitler, Führer	1933
Great Britain	George VI, King and Emperor	1936
	Neville Chamberlain, Prime Minister	
Greece	George II, King	1935
	Gen. John Metaxas, Premier	
Guatemala	Gen. Jorge Ubico, President	1931
Haiti	Stenio Vincent, President	1930
Honduras	Gen. Tiburcio Carías Andino, President	1933
Hungary	Admiral Nicholas von Horthy, Regent	1920
	Koloman Daranyi, Premier	
Iceland	Christian X, King	1912
India	Marquess of Linlithgow, Viceroy	1936
Iran	Reza Shah Pahlevi	1926
Iraq	Ghazi I, King	1933
Ireland	Eamon de Valera, President	1932
Italy	Victor Emmanuel III, King	1900
	Benito Mussolini, Premier	
Japan	Hirohito, Emperor	1926
	Prince Fumimaro Konoye, Premier	
Latvia	Kārlis Ulmanis, President	1936
Liberia	Edwin Barclay, President	1931
Liechtenstein	Francis I, Prince	1929
Lithuania	Antanas Smetona, President	1926
Luxemburg	Charlotte, Grand Duchess	1919
Manchoukuo	Henry Pu Yi, Emperor Kwang-te	1934
Mexico	Gen. Lázaro Cárdenas, President	1934
Monaco	Louis II, Prince	1922
Morocco	Moulay Mohammed, Sultan	1927
Nepal	Maharaja Bir Bikram Jang, King	1911
Netherlands	Wilhelmina, Queen	1890
Newfoundland	Sir Humphrey T. Walwyn, Governor	1936
New Zealand	Viscount Galway, Governor-General	1935
	Michael J. Savage, Premier	
Nicaragua	Gen. Anastasio Somoza, President	1937
Norway	Haakon VII, King	1905
Oman	Sayid Said bin Taimur, Sultan	1932
Palestine	Gen. Sir Arthur Grenfell Wauchope, High Commissioner	1931
Panama	Dr. Juan D. Arosemena, President	1936
Paraguay	Felix Paiva, Provisional President	1937
Peru	Gen. Oscar R. Benavides, President	1935
Philippines	Manuel Quezon, President	1935
Poland	Ignace Moscicki, President	1926
	Felicien Slawoj-Skladkowski, Premier	
Portugal	Gen. Antonio Carmona, President	1926
	Dr. Antonio Salazar, Premier	
Rumania	Carol II, King	1930
	Octavian Goga, Premier	1937
Russia	Viacheslav M. Molotov, President	1931
	Joseph V. Stalin, Communist Secretary	
Salvador, El	Gen. Maximiliano H. Martínez, President	1935
Siam	Ananda Mahidol, King	1935
	Phya Phahol Sena, Premier	
Sudan	Sir George S. Symes, Governor-General	1933
South Africa	Sir Patrick Duncan, Governor-General	1936
	James B. M. Hertzog, Premier	
Spain	Manuel Azaña, President of the Republic	1936
	Gen. Francisco Franco, Insurgent Leader	1936
	Gustaf V, King	1907
Sweden	Dr. Giuseppe Motta, President	1937
Switzerland	Hashem Bek el Atassy, President	1936
Syria	Abdullah ibn Hussein, Amir	1928
Trans-Jordan	Sidi Ahmed II, Bey	1929
Turkey	Kamál Atatürk, President	1923
United States	Franklin D. Roosevelt, President	1933
Uruguay	Dr. Gabriel Terra, President	1931
Vatican City	Pius XI, Pope	1922
Venezuela	Gen. Eleazar López Contreras, President	1935
Yugoslavia	Peter II, King (Regency)	1934
	Milan Stoyadinović, Premier	
Zanzibar	Seyyid Sir Khalifa bin Harub, Sultan	1911

**Soviet Arctic Scientific Station:** see ARCTIC EXPLORATION.

**Soviet Fliers:** see ARCTIC EXPLORATION.

**Soviet Republics:** see UNION OF SOVIET SOCIALIST REPUBLICS.

**Soviet Union:** see UNION OF SOVIET SOCIALIST REPUBLICS.

**Soybeans.** Previous to 1917, the acreage of soybeans in the United States was insignificant. In 1937 a crop of 40,997,000bu. was produced from 6,989,000ac., of which 2,337,000ac. were planted for grain and 3,659,000 for hay, the remainder being otherwise used for forage or fertilizer. The U.S. Department of Agriculture gives the 1936 figures as 29,983,000bu. from 6,646,000ac., of which 2,132,000 were planted for grain and 3,251,000 for hay. The yield was 17.5bu. to the acre in 1937. In 1936 it was 14.1 bushels. The production of soybeans in Manchoukuo was 153,072,000bu. in 1937 and 152,375,000 in 1936. In Chosen it was 22,606bu. in 1937 and 19,375 in 1936. Although many new and interesting industrial uses have been developed for soybeans, and entertainingly publicized, the chief importance of the crop continues to be its value as livestock feed. Soybeans have about as wide adaptability as corn or maize. This fact has added greatly to the plant's usefulness in American agriculture, and, since soybeans are fairly drought resistant, the crop has been especially practical in recent drought years, when corn failed and soybeans were planted as an emergency crop both for cash and feed. (S. O. R.)

**Spain,** republic of south-western Europe, since July 1936 involved in a civil war, as a result of which the *de jure* government at present exercises authority in the eastern part of the country only. Capital, Madrid. Government at present established at Barcelona; Ruler, President Manuel Azaña (elected May 10, 1936); national flag, three equal horizontal bands, red, yellow, purple.

**Area and Population:**—Area: (including Balearic and Canary Islands), 196,600 sq.mi. Population (estimated 1934), 24,583,100. Density, 122 per sq.mi. Since 1931, there has been no established religion; the overwhelming majority are Roman Catholics, but all creeds are equal before the law. Spanish (Castilian), the official language, is spoken everywhere, but Catalan (in Catalonia, Aragon, and the Balearics), Galician (in Galicia and the West), and Basque (in the Basque provinces) are also in use. Elementary education is nominally free and compulsory; the 1930 census showed that some 45% of the population were illiterate. There are 11 universities. The leading cities are: Barcelona (population, est. 1934, 1,148,000), Madrid (1,048,100), Valencia (353,000), and Seville (238,750). In 1934, six other cities had a population exceeding 100,000. (X.)

**History.**—Throughout 1937 the Civil War continued, an account of which follows in the article SPAIN, CIVIL WAR IN.

At the end of 1937 the number of provincial capitals held by the Popular Front Government was 15 out of a total of 50. It was holding rather less than two-fifths of the territory of Spain, but the possession of Madrid and Barcelona, together with large refugee-immigrations, gave it a slightly larger proportion of the population.

Madrid, now strongly fortified, has remained all the year partially invested, and has suffered numerous air-raids; Valencia was the seat of the Government until October 30, when this was transferred to Barcelona. President Azaña apart from making several speeches and once visiting Madrid, has been little seen or heard. On February 1 and October 1, the Cortes held short sessions at Valencia. On May 17 Dr. Juan Negrín succeeded Sr. Largo Caballero as prime minister; his Government contained three Socialists, two Communists, and one member each



from the Republican Left, Republican Union, Catalan Esquerra, and Basque Nationalist groups. The Anarcho-Syndicalists were thus excluded, as they were also from the Catalan Government in June. In mid-October, Sr. Largo Caballero was superseded as leader of the Socialist Party by an old rival, Sr. González Peña. A few days later, Don José Asensio, under-secretary for war in the Caballero cabinet, was arrested, with three highly-placed officers, on charges arising from the fall of Málaga in February.

The Popular Front now has an efficient, disciplined army, and the morale of both army and people is high. Severe penalties (up to 20 years' imprisonment with hard labour) were announced in June for those failing to present themselves when called up for service. Wrangles between U.G.T. (Socialists) and C.N.T. (Syndicalists) have been frequent, but public order has notably improved, and much less has been heard of assassinations and atrocities. Food is scarce, since refugees from territory occupied by the Nationalists, unable to stay in France, have had increasingly to cross into Republican Spain: the 4,000 Basque children brought to England in May 1937 are outstanding exceptions. Religious intolerance continues in Republican Spain: all Catholic churches, even if unharmed, are closed, and public worship is forbidden.

Catalonia, more prosperous materially than other Popular Front territory, has suffered grave political crises. In March 1937, strife between P.S.U.C. and P.O.U.M. and between U.G.T. and C.N.T. overthrew the three-months-old Generalitat Government, and a new coalition cabinet of six was formed by Socialists, Syndicalists, and Esquerra. The murders of a Socialist and an Anarchist leader in April were followed by an Anarcho-Syndicalist revolution in Barcelona in May. Several hundreds were killed; with the help of shock-troops from Valencia, the rebels were defeated; the Government again fell; and power was assumed by a committee of four, succeeded on June 29 by a cabinet (Socialists, 3; Syndicalists, 3; Esquerra, 3; Rabassaires, 1; Independent, 1), from which the Syndicalists almost at once resigned. In July, these events were followed by the arrest of the entire executive of the P.O.U.M. On Aug. 18, the Catalan parliament held a two-day session (the first for over a year), when the Socialists attempted unsuccessfully to impeach the speaker, Sr. Casanoves, who some months earlier had fled to France from the Extremists. After this, the situation improved, and Sr. Company's re-election to the presidency of the Generalitat lent it stability.

In Nationalist Spain, order is excellent, food plentiful, business good, confidence of victory high, and the peseta worth over

twice as much as in Republican Spain. Progress with the construction of the totalitarian State outlined in General Franco's Burgos speech of Oct. 1, 1936, has been steady, its chief features being the unification (April 19, 1937) of Falange Española and the Requetés into a single party; the adoption of the 26-point Falangist program; the creation of a "National Council," and the appointment of its first members; the institution of agrarian services, notably the National Wheat Service Board; and the announcement that social service is to be made compulsory for women. (See also AZANA, MANUEL; PHILATELY; POPULAR FRONT; SOCIALISM.)

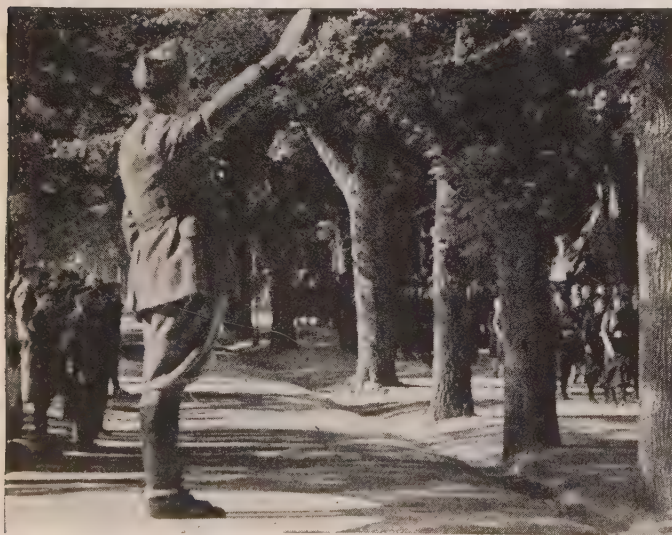
**Trade and Communications.**—Agriculture is the main industry, olives, wine, and citrus and other fruits being extensively grown. The mineral wealth, especially in iron ore, copper, manganese, lead, mercury, and potash salts, is very great. In 1935, the imports were valued at £35,172,000, and the exports at £23,528,000. There are about 10,400 mi. of railway (mostly of 5 ft. 6 in. gauge), and over 60,000 mi. of roads. Air services connect Madrid with Barcelona, Lisbon, Paris, and London. The mercantile navy includes about 900 vessels of nearly 1,050,000 tons.

**Finance and Banking.**—The unit of currency is the peseta, nominally 25.22 to the pound sterling, divided into 100 centavos. Its exchange value is at present very uncertain, and at the end of 1937 varied within wide limits—60 to 100 pesetas to the pound. The estimated revenue and expenditure for 1936 were £176,800,000 and £182,800,000 respectively. The Bank of Spain is in contractual relations with the State.

**Defence Forces.**—No reliable details of the present military and naval strength of the contending forces in Spain are available. At the outbreak of war in 1936 the army was about 140,000 strong—raised by compulsory service—and there were some 200 military aircraft. The navy includes two battleships and seven cruisers.

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**Spain, Civil War in.** The success of the Popular Front in the Spanish elections of Feb. 1936 was followed by months in which the atmosphere was becoming charged with revolt. On July 13 the Fascist leader Calvo Sotelo was murdered by a band of shock police in revenge for the murder of a police officer the previous week. On July 17 the Civil War opened with the rising of the Foreign Legion in Morocco under the leadership of General Franco, who had flown there from the Canaries. That day and the next the officers of numerous garrisons led similar revolts in Spain itself. These failed in Madrid and Barcelona, but succeeded in Burgos, Saragossa, the Balearics, and other places. The great majority of the officers of the army had joined in the insurrection, but half the fleet and the bulk of the air force remained loyal to the Government, which sought to offset the defection of the army by arming the people. On the morning of the 19th the workers' militia assumed charge of Madrid, patrolling every street. The quiet was soon broken by Fascist snipers and motor guerrillas, and the process of hunting these down developed into a general outbreak of violence directed indiscriminately against those of Right Wing sympathies. A weeks-long reign of terror and confusion was inaugurated, in which many were murdered and much ecclesiastical property was destroyed. These widespread outrages were matched by deliberate ruthlessness on the other side, which, according to much neutral evidence, pursued a systematic policy, not only of giving no quarter to armed opponents, but of exterminating, in the districts where they seized control, those who were known or suspected of being politically on the Left. In this way they might



GENERAL FRANCO, insurgent leader, salutes Spanish Fascist parade on the annual "Day of the Race" celebration, commemorating the birthday of Columbus



**WOMEN FLEEING** before an aerial bombardment of the Basque capital, Bilbao, by Spanish rebel aeroplanes

safeguard their communications, while spreading fear among any who were inclined to offer resistance.

On July 24 General Mola set up a National Government at Burgos; his forces moved on Madrid, but were checked in the passes of the Guadarrama mountains. In the far north-west, the Nationalists had captured Oviedo, but were there besieged by the miners of the district. In the south the Nationalists captured Cadiz and then Seville, General Franco bringing Moorish and Foreign Legion reinforcements across from Africa, greatly helped by Italian bombers, which drove the Government warships away from the Straits of Gibraltar, thus clearing the passage. German warships appear to have given more veiled co-operation. But the part of the Spanish fleet which had joined in the revolt was also more effectively handled than the part which remained with the Government. The capture of Seville was followed by an advance northward to join hands with General Mola's forces. Badajoz was stormed on Aug. 14, a success that was followed by a particularly drastic cleaning up. In the north the Nationalists forced the evacuation of Irun on Sept. 4, after a long resistance, and then occupied San Sebastian. This blow precipitated the fall of Señor Giral's moderate Government, and it was succeeded by one under Señor Largo Caballero that was predominantly Socialist.

A convergent advance on Madrid then developed. In the south, Franco pressed on Toledo, where for two months a small band of his supporters had been holding out in the citadel, and Alcázar, besieged by a much larger if ill-armed force of militia. Toledo was reached on Sept. 27, and the retreat of the militia brought relief to the heroic defenders of the Alcázar. On Oct. 1 General Franco was proclaimed head of the Nationalist Government. On the 3rd a bombing campaign against Madrid by Italian and German aircraft began, while the encircling movement on the ground was extended, small Italian tanks helping to force the evacuation of various points of resistance. The fall of Madrid was regarded as certain, not only by the Nationalists, but by most of the outside world. A counter-offensive on the 30th brought momentary respite, but when its impetus slackened, the Nationalist troops followed up the ebb and established themselves in the outskirts of the city, although checked at the bridges across the Manzanares river. On Nov. 7 the Government left for Valencia, entrusting the defence to General Miaja. Next day the first detachment of the International brigade, a force of foreign volunteers recruited from many nationalities, appeared on the scene and greatly stiffened the resistance. A few days later the attackers' superiority in the air was effectively challenged by the Government's air force, reinforced by Russian fighter machines which had newly arrived. Air attacks became increasingly unprofitable, when results were weighed against risks. On land, now that the direct attack has superseded the earlier phase of manoeuvre, the



modern superiority of the defensive was manifested afresh. Franco's continued offensive efforts brought more loss than gain, and his progress everywhere became stagnant.

During the winter a state of deadlock prevailed, hardened by the weather. During these months the Government forces on the whole remained on the defensive, and succeeded, despite their inferior equipment and training, in frustrating the Nationalists' efforts to extend their gains. With each month of continued successful resistance, the Government's prospects were likely to improve—so long, at any rate, as General Franco did not receive a great increase of assistance from foreign sources. The deadlock was broken in February by the fall of Málaga, a Nationalist coup which was marked by good strategic judgment as well as by Italian backing on a new and important scale. The resistance was light, its moral stability being easily shaken by the effect of surprise on a state of unpreparedness.

The effort had a significant moral reaction. The Government was spurred to change their strategy, and to attempt a widespread series of offensives. These, as was to be expected, made no great material impression, except on the casualty totals. As was also to be expected, the exhaustion of the attackers offered a more promising opportunity for the Nationalist forces to renew their offensive. It remained to be seen whether General Franco's forces were capable of exploiting it sufficiently under the conditions of modern warfare. Their most threatening effort was the three-pronged stroke from Sigüenza south-westwards towards Guadalajara and Madrid, delivered on March 8, 1937. It followed an attempt to cut the road to Valencia, which, though incompletely successful, had drawn off the Government's best troops to the south. While the Guadalajara stroke preserved the assets of surprise and mobility, its promise was high, but these waned all the sooner because of the intervention of bad weather which gave the resistance time to harden and to be reinforced by General Miaja. Stuck in the mud, the Italians, who largely composed the attacking force, soon became ripe objects for a counterstroke, which came on March 13. Its dramatic success repeated the





experience of the World War, where the most striking victories, so long as the forces were fairly well matched, were produced by action of the counter-offensive form. It also showed, as the Abyssinian War had shown previously, that aircraft are specially formidable in such action, and that their advent has greatly enhanced its power.

In the spring of 1937 the Nationalists, baulked elsewhere, concentrated their efforts on an offensive campaign against the isolated Basque territory on the northern coast. Frequent clouds in the mountains at first hindered the use of the mass of Italian and German aircraft which had been concentrated for this purpose and, so long as this friendly cloak remained to compensate the Basques' lack of air defences, they proved able, though only a militia, to hold up the attack of superior ground forces. The experience showed that so long as troops in defence have the spirit to resist, their resistance is likely to prevail even under adverse conditions of training and equipment. A change in the situation came with a temporary improvement of flying conditions, and the progress which the Nationalists subsequently achieved coincided with their opportunities to employ their air superiority as a tactical lever, in loosening the defence of key positions which offered a well-defined target. Entrenchments in the mountains were far more visible from the air than those sited in valleys or plains. And the Basques were almost entirely lacking in either aircraft or anti-aircraft artillery with which to counter the threat overhead. Systematic air bombardment is hard to endure if there is a lack of direct counter-means, especially where the troops exposed to it know that their resistance on the ground does not suffice to cover their homes, and that their families are suffering a similar bombardment which they can't check.

A further asset which the Nationalists and their foreign allies used with marked effect in the Basque campaign was the concentration of artillery fire—as many as 200 guns on a  $1\frac{1}{2}$  mi. sector—to blast a hole at a particular point where it was desired to drive in a wedge, and thereby loosen the general front of the defenders. If such a volume of fire was an indication of the extent to which their artillery had been reinforced from foreign sources, the concentration was facilitated and enhanced through the way it was made a complement to the air bombardment, spread more widely. Its greatest effect was achieved when the Basques fell back on their so-called "Iron Ring" close to Bilbao, a line whose length without depth was its weakness. In contrast to the difficulty which the Nationalist artillery had met during the time of the Basques' manoeuvring withdrawal, they were now presented with a fixed and clear target, while the moral effect on the defenders, when a hole was punched in this line which had seemed so strong, was all the greater because the troops on the flanks of the breach felt themselves suddenly at a loose end, deprived of the firm pivot on which they had been made to lean too heavily. Lack of elasticity made the defensive dispositions brittle. It was a lesson of wider significance, confirming the experience of the last war, and showing that the best defence is the mobile form rather than the more obvious one of taking up, or falling back quickly to occupy, too obvious positions.

The capture of Bilbao in June was followed, after a short interval, by the advance on Santander, another objective where the defence was handicapped by lack of room for a manoeuvre in retreat within the narrow coastal strip, as well as by lack of means to nullify the attackers' main weapons. To these was now added



the use of tanks on a larger scale and with more effect than ever before in the Spanish War. The high ratio of machine-power to man-power was a significant feature of this offensive. According to report, the attackers used five small infantry divisions, totalling about 5,000 men apiece, but with them were employed about 200 tanks, nearly as many fighting and bombing aircraft, and artillery numerous enough to concentrate 18 batteries on the front of a single small division, with apparently a similar quantity supporting others. The August operations which culminated in the capture of Santander had been the one clear triumph of the offensive during the Spanish War hitherto, although recognition of the fact has to be qualified by recognition of the defenders' weakness. It suggests that raising the ratio of machine-power offers the only chance of successful attack, if it does not justify the assumption that this will prevail against a defender with similar equipment.

On land, the experience of the war has strongly supported the evidence of the World War that the defence is paramount at present. This has added significance, because relatively small forces in vast areas offered the attack more scope and a better chance, than it had on the closely packed Western Front. There have been a few successes gained merely by manoeuvre. But offensives by either side have in general had small effect in proportion to their cost of life. And, even when a local moral breakdown has momentarily cleared the attackers' path, experience has again confirmed that of the World War in showing that conditions set a term to their powers of exploiting it. In taking the offensive, each side was embarking on a venture whose tactical foundations were unsound, and whose slender chance of any great effect lay in the psychological sphere—in the possibility that the opponents might be ripe for a moral collapse. Otherwise a heavy sacrifice of life with little to show was the probable result. The original circumstances of the campaign, a military revolt against the Government, compelled General Franco to adopt an offensive strategy if he was to attain his aims; the extent to which his forces have pursued the offensive tactically would seem to have been more avoidable, and more dangerous to his cause. Hitherto, it has only brought a profit where he has been able to concentrate a great superiority of bombers, guns, and tanks against an isolated section of the opposition which has lacked the means to combat them as well as the depth of ground to avoid them.

On the other side, the contrasting circumstances of a Government without an army helped to produce a wiser tactical course, and this was long maintained. Its abandonment by the Government in February 1937, may be traced to later circumstances which were too strong for restraining calculation. Raw troops and mass levies are apt to lose morale when kept to the defensive, though it may be well suited to their conditions tactically; even trained forces may falter if thus restrained, unless they have been carefully taught that the highest art of soldiership lies in utilizing the advantages which fire defence and calculated withdrawal offer for entrapping the opponent. None the less, the side which nowadays pins its hopes to the attack courts the risk of undermining its own troops' morale in the effort. That risk has matured first on one side and then on the other.

General Franco, who started with the advantage in trained troops, could least afford to waste them: as he has done, not merely under pressure of circumstances. Since the autumn of 1936 he has been increasingly dependent on foreign resources in far greater measure than his opponents. And as the months have passed, it has become clear that his chances of military victory depend on the forces poured in by Italy and Germany—not so much in man-power, as in technical resources. (See also ARMIES OF THE WORLD; AZANA, MANUEL; BALEARIC ISLES; BARCELONA; BILBAO; GUERNICA; INTERNATIONAL LAW: Civil War; ITALY:

History; MEDITERRANEAN, THE; MUNITIONS OF WAR; NON-INTERVENTION COMMITTEE; PORTUGAL; ROMAN CATHOLIC CHURCH; SHIPPING, MERCHANT MARINE: War; UNITED STATES: Foreign Affairs.) (B. H. L. H.)

**Spanish-American Literature.** Since the World War letters reveal greater individuality and more independence from European norms. They show a persistency in the "criollo" movement, more social concern and finer aesthetic tendencies. The novel has surged forth in a new school of its own, realistic, tragic, social, primitivistic, concerned with nature. The essay has depth and breadth rarely reached before. The most inclusive literary history appearing during 1937 was by Luis Alberto Sanchez; *Cuban Poetry in 1936* was edited by Juan Ramón Jiménez and José María Chacón.

The novel is well represented. Rómulo Gallegos wrote *Pobre Negro* that has passages the equal of anything he has written; L. M. Urbaneda Achelphol, *La casa de las cuatro pencas*, describes a provincial town; Julian Padrón in *Candelas de Verano* depicts Venezuelan country life; Antonio Reyes writes short stories, *Viudas de Color*; Mariano Azuela strikes a note of political criticism in *El Camarada Pantoja*; Mauricio Magdaleno utters the same criticism in *El Resplandor*; also Alfonso Tarracena in *Los abrasados*. Another interesting novel is *Alas Abiertas* by Alfonso Teja Fabre, who glorifies aeronautics. The hardships of colonization are vividly described by Manuel Méndez Ballester in *Isla Carrera*. Gerardo Gallegos draws short stories, beautifully written and conceived, *El Embrujo de Haití*. *Cienega* by Luis Felipe Rodríguez is a recasting of an excellent novel.

Other prose works: Eduardo Mallea, *Historia de una pasión Argentina*, an elegantly conceived psychic search of self and the *devenir* of a spiritualized people. Arturo Usler Pietri in *Red* reveals the critical touch of an artist. *Nuevas Páginas Libres* is from the master prose writer González Prada. *La clínica del Dr. Mefistópeles* by Alberto Gerchunoff shows elegance and irony. Ramón Díaz Sánchez's *Transición* is a study of Venezuela's present day affairs. *Nene* by the same author is of positive merit. A real contribution is Francisco Ichaco's *Defensa del hombre*. José Vasconcelos in *Breve historia de Méjico* praises Cortes and the Spaniards as benefactors of Mexico. Luis Fernando Alvarez's *Va y Ven* is a fine work. *Hombres y zorros* by Mariano La Torre relates country scenes in concise style. *Visperas de España* by Alfonso Reyes are the collected works on Spain by this excellent critic. José Gabriel's *España en la Cruz* has beautiful style and is full of observations. Gabriel's *Las semanas del jardín* is a gaucho motive. *Madrid* by Demetrio Aguilera Malta has vivid description.

Among the most illuminating biographies one should consider *Diego Portales* by Magdalena Petit, a dramatic life of the Chilean leader; *Obregón* by Hernán Robledo, thoughtful but journalistic; *Luis A. Martínez* by Augustus Arias, precise and animated; and his *Jorge Isaacs y su "Maria"* demonstrates the autochthonous in Isaacs' novel; Medardo Vitier's *Varona: Maestro de juventudes*, studies the Cuban philosopher; *Balmaceda, político romántico* by Luis Enrique Delano is interesting, but journalistic.

The artistic soul of Spanish Americans pours itself out readily in poetry. *Poemas del amor doliente* by José Santos Chocanos are some unedited marital love songs. Nicolás Guillén handles political poetry superbly in *Cantos para soldados y Sones para turistas*, as well as in *España: Poema en cuatro angustias y una esperanza*. In *España en el corazón*, Pablo Neruda shows imagination and intensity. Miguel Otero Silva cries out in behalf of suffering humanity. Manuel González Prada's *Grafitos* are good epigrams. Elías Nandino has feeling and sensual conflict in *Sonets*. In *Presencias*,



Leopoldo Ramos has trite regional colouring. *Ultimos poemas* is the most important collection of María Monvel. Xavier Icaza's *Marea Encendida* is a modernistic expression of love in its natural aspect, while *Triptos de amor y desamor* are musical stanzas of a passing love affair. Victor M. Rendón sings in classical form his *Himnos, votos y homenajes*. *Poesías* of Ruperto Gómez is a selection made by his sons. Emma Pérez, *Niña y el viento de mañás* is excellent poetry; so is *Tumulto* by José Portagallo; likewise, *Doble Acento* by Eugenio Florit. The dramatic poem *Pasión y Muerte de Silverio Leguizamón* of B. Canal Feijó is admirably written. *Wayno* by the promising Peruvian poet José Hernández is fine. *Teoría de la niebla* by R. Olivares Figueroa was selected for a prize by the Association of Venezuelan writers.

(J. M. HE.)

## Spanish and Portuguese Literature.

Nineteen-thirty-seven saw very many publications from both sides in the Spanish conflict. On the Government side, poetry was represented by the collection, *Romancero general de la Guerra civil*, by such writers as Altolaguirre, Varela, Infante, Garfias, Bergamín, Dieste, Prados, Hernández, and Plaja; and the series *Poetas de la España leal*, by such writers as Antonio Machado, J. M. Villa, R. Alberti, Altolaguirre, Cernudon, Prados, and Hernández.

Among the Government prose writers, Manuel Benavides wrote a novel on the present situation, *Crimen de Europa*. The president of the republic, Manuel Azaña, himself an essayist and poet, published various speeches. One of Spain's greatest writers, Juan Ramon Jiménez, did much in Cuba to help the Government. Another great writer, Ramiro de Maeztu, disappeared during the anarchist massacres in Madrid in 1936. A number of important Spanish writers remained neutral in Paris.

On the Insurgents' side, the great essayist E. Giménez Caballero, has written *La Nueva Catolicidad* and *La Falange Lecha Lombre Conquista el estado*. One of the most important Spanish poets, actually in Buenos Aires, E. Marquina, brought out *Por el amor de España*. The poet and playwright, J. M. Pemán, produced *Atencion! Atencion!; Almoneda*; and *Cartas a un Escéptico en Materia de forma de Gobierno*. Among much political and theoretical writings were G. P.-L. Suarez's *La España que muere y la España que nace*, General Mola's *Doctrinal de un Héroe y Hombre de Estado*, and Retortillo's important *Razones jurídicas de nuestra guerra*.

Among the poems dealing with the war from the Insurgents' side were A. Martin's *Castill y la Guerra* and *Romancero guerrero*, Muñoz San Roman's *Ideario patriótico* (this author also wrote a novel, *Las Fieras Rojas*), and Alconchal's *La novena cruzada*.

**Portugal.**—The literary event of 1937 for Portugal was the fourth centenary in April of the death of Gil Vicente, the great dramatist, which gave rise to a large number of books. Two volumes of poetry were outstanding, namely, *Epopeias, Diálogos com Deus* by António Marques Matias, and *O Homen Universal* by Teixeira de Pascoés, who tried in this book to discover the essential theme of life.

The novels of 1937 included: *Fui en que matei* by Sousa Costa, *A Casa fechada* by Vitorino Nemésio, *Tres raparigas em liberdade* by Amadeu de Freitas, and *S. Banaboião, Anacoreta e Mártir* by Aquilino Ribeiro.

(S. L. EN.)

**Spanish Civil War:** see SPAIN, CIVIL WAR IN.

**Spanish Guinea:** see SPANISH WEST AFRICA.

**Spanish Morocco,** zone in the north of Morocco, opposite Gibraltar, about 13,000 sq.mi. in area, with a population of 800,000; a Spanish protectorate, ruled by a

high commissioner representing the Spanish Government, the powers of the sultan of Morocco being delegated to a Khalifa. Capital, Tetuan (pop. c. 50,000). The people are Mohammedan Berbers or Moors, speaking Arabic or Berber dialects. Agriculture is carried on on primitive lines, and iron is mined; there are about 80mi. of railway, and over 500mi. of passable roads. Shipping trade is mainly through Ceuta, which, though on the African coast, is an integral part of Spanish mainland.

The Spanish civil war at present being waged began in July 1936 by a rising of troops in Spanish Morocco, which has since remained in the hands of the insurgents. In Jan. 1937 the French Government protested against the alleged infiltration into Spanish Morocco of German troops and the development of German military and commercial interests, including the building of barracks for a German armed force; but Hitler replied with a statement that Germany had no designs there. In May the Spanish Government declared that it looked upon the Moors in Franco's forces as foreign, not Spanish troops.

**Spanish West Africa.** Under this heading are included a number of Spanish settlements on the west coast of Africa and in the Gulf of Guinea.

Rio de Oro and Adrar extend along the N.W. coast from the Wadi Dra'a river to Cape Blanco. The area is 109,200 sq.mi., and the population are mainly nomadic Arabs, with less than 1,000 European inhabitants. The capital is Villa Cisneros. The territory is practically waterless. Ifni, further to the north, is a coastal strip of 965 sq.mi. at the S.W. end of the Atlas mountains. The estimated population is 60,000.

Rio Muni is a coastal settlement between the Cameroons and French Equatorial Africa, extending about 125 miles inland. The principal town is Bata, and the area is 9,470 square miles.

Fernando Pó, an island in the Gulf of Guinea, is the most valuable of these possessions. Its area is c. 781 sq.mi. and pop. c. 20,870. The capital is Santa Isabel. The products are ebony, mahogany, palm products, and very valuable cocoa.

**Special Areas.** The British Government created a precedent in 1934, when they appointed a commissioner for Special Areas with wide powers to provide work in the distressed areas of Glamorgan and Monmouthshire in South Wales, Durham and parts of Northumberland in North-east England, Cumberland in the North-west, and Clydeside and smaller areas of the East coast in Scotland. A revolutionary change was effected by the Special Areas (Amendment) Act, which received the Royal Assent on May 6, 1937, and granted power to the commissioners to give financial assistance to private enterprise. This was because of the comparative failure of the commissioners in the previous two and a half years to persuade industry to move to the distressed areas. The Government defence program has contributed in the past year to the reduction of 72,344 in unemployment in the Special Areas. The commissioner's latest report (November 1937) states that the cost of Government factories and agency factories in connection with defence, erected or in course of erection in the Special Areas of England and Wales, is approximately £15,500,000. In addition, between April 1, 1936, and the end of August 1937, orders to the value of £32,870,000 were placed in the Special Areas of England and Wales by the service departments. In spite of these orders and of the new powers conferred upon the commissioner to subsidize industry, transference schemes to more prosperous areas have led to 43,000 leaving their homes. In addition, the population fell in the year ending June 1937 by 37,929. On Sept. 13, 1937, there were still 210,608 unemployed workers in the Special Areas. The Government committed themselves, up to Sept. 30, 1937, to a



total expenditure of £12,900,000. The largest items of expenditure give a good idea of the types of schemes which have been favoured up to now, not only for the provision of employment, but the establishment of social amenities in districts rendered unsightly by the remains of dilapidated mines and factories. The heaviest expenditure (£3,080,000) has been on small-holdings schemes; then come trading estates and individual sites (£2,850,000), hospitals (£1,780,000), and sewerage disposal schemes (£1,715,000).

In addition, the trustees appointed to administer a fund of £2,000,000 given by Lord Nuffield in Dec. 1936, announced that they have promised financial assistance to 43 industrial undertakings in England and Wales to the extent of £1,346,000. Most of this money is being used in financing new industries. Another fund, the Special Areas Reconstruction Association, it was stated at the first general meeting in Sept. 1937, had agreed to loan £403,450 to 67 concerns which were providing a combined capital of £786,720 from other sources.

The immediate future policy of the commissioners for Special Areas will be to induce established firms in other parts of the country to set up branch establishments in the Special Areas, and to induce new firms to open their first factories there.

The power conferred on the commissioners in May 1937 authorized them to let factories at special rents and rates to any industrial undertaking: the commissioners may offer financial assistance to companies towards rent, rates, and income-tax; and loans may be made towards factory extensions.

It is obvious, from the terms of this act, that the Government has assumed a new responsibility for the location of industries. A separate report was issued for the Special Areas in Scotland. Since the end of 1934, when the commissioner began operations, unemployment in the Scottish Special Areas fell from 94,998 to 58,318 (June 1937). (See also NATIONAL INSURANCE; and for the United States see RELIEF; SOCIAL SECURITY.)

**Speedway Racing:** see AUTOMOBILE RACING.

**Spices.** The international trade in spices, which are principally used in the production of sausages, sauces, and pies, is chiefly directed towards the United States, the United Kingdom, and western Europe, the main exceptions being the trade in cloves, directed towards India and the Netherlands East Indies, and that in chilies, directed towards Ceylon. The greatest demand for the cinnamon of Ceylon is in Spain and Spanish America.

Of the various spices important in international trade, pepper is derived chiefly from the Netherlands East Indies, cloves come from Zanzibar and Madagascar, and the ginger plant is cultivated widely in tropical countries, including many parts of the British Colonial Empire. China is the leading exporter, the fresh ginger being sent to Hongkong, where it is preserved and exported.

The Netherlands East Indies export annually about 80,000cwt. of nutmegs, and Grenada about 25,000 hundredweight. India exports each year about 170,000cwt. of chilies, together with smaller quantities of cardamoms and other spices. Ceylon's export of cinnamon averages about 45,000cwt., and about 90,000cwt. of pimento are exported annually from Jamaica. Zanzibar and Grenada are the only countries where the trade depends very largely on the export of spices. Although India is an important source of supply of pepper, ginger, and other spices, the trade in these commodities makes up a very small part of the total exports.

Generally, more than one-half of United Kingdom imports of pepper comes from Empire countries, such as the Straits

Settlements, India, and Sarawak, although much of that shipped from the Straits Settlements is grown in the Netherlands East Indies. Imports in 1934 and 1935 were exceptionally large, owing to abnormal trading, but in 1936 and 1937 there was a considerable decrease. The British re-export trade in pepper is chiefly with the United States, Canada, and Germany. Practically all the British imports of cloves and fresh ginger are of Empire origin, and a very large part of the other spices also come from the Empire.

The United States for some years has maintained the chief position among all other countries in the direct consumptive demand of practically all kinds of spices, the only two exceptions being ginger and chilies. (A. E. Wl.)

**Spirits.** The world's greatest producer and consumer of spirits is the United States, and the development of the American market since Prohibition days has, either directly or indirectly, revolutionized the spirit trade of the world. When the United States repealed Prohibition, the country was without matured stocks of whisky. There were, however, plenty across the border in Canada, and the distilling industry of that country was saved from a serious crisis. Since repeal, stocks of matured spirits are being built up in the United States, and although higher taxes and enhanced prices tend to make the *pro rata* consumption lower, the production is now considerably higher than it was in 1917. Thus, in the fiscal year ending June 1937, 223,682,019 proof gallons of whisky, 2,523,629 of rum, 7,209,475 of gin, and 12,425,922 of brandy were produced, as compared with 57,651,834 proof gallons of whisky, 2,842,921 of rum, 5,756,666 of gin, and 8,251,097 of brandy in 1917; while in the fiscal year ending June 1937, tax was paid on 72,878,710 proof gallons of whisky, 532,325 of rum, 7,264,481 of gin, and 1,966,574 of brandy, as compared with 83,591,339 proof gallons of whisky, 659,815 of rum, 5,408,321 of gin and 3,551,084 of brandy in 1917. At the same time, however, taxes paid in 1937 on neutral spirits were for only 32,257,537 gallons as compared with 71,081,121 in 1917. It is estimated that up to 50% of this neutral spirit is used in the production of gin, and about one-third for blending with whisky, from which it is obvious that spirit blends are much less popular than formerly. In the U.S. blending is for cheapness, in contradistinction to the Scotch ideal, which is to harmonize in the one bottle the maximum number of high qualities.

In the United Kingdom, particularly in Scotland, the results of repeal have been far-reaching. After the World War, heavy duties and dwindling markets at home and abroad led to a steady contraction in the industry, both as regards the number of distilleries and of blending houses; but now that the American demand is several times what it was in pre-War days, and consumption throughout the world has increased again, the renovated distilleries have relit their fires. Imports of spirits from the United Kingdom to the United States rose from 1,496,995 proof gallons in the first 11 months of 1935 to 3,921,666 proof gallons for the same period in 1937. The blender, however, requires age and maturity in the single whiskies (he may use 40 or 50 of them) which he marries into his blend, and prices for single whiskies stand at unprecedented levels.

Next to whisky and gin, the favourite spirit with the Anglo-Saxon countries is rum. Large quantities are now being produced by the United States, particularly in the Virgin Islands; but Jamaica still produces the world's premier rum. Substantial quantities are also exported from other islands in the British West Indies. Brandy is not selling so freely as it once did, but the reputation of cognac remains as high today as ever.

(D. F. C.)



**Squash Racquets.** The 1937 championships were played at Cleveland, Ohio, where Germain G. Glidden, of the Harvard Club of New York, the defending champion, retained the title won the previous year, defeating Neil J. Sullivan, 2nd, of the Germantown Cricket Club of Philadelphia who held the title in 1934. The national squash racquets team championship of 1937 was won by the Boston team of Harry K. Cross, Edwin G. Hoehn, John H. Hull, A. M. Sonnabend and R. V. Wakeman. In the doubles national championship the Philadelphia team of Roy R. Coffin and Neil J. Sullivan, 2nd, won for the fifth consecutive year, defeating A. J. Ingraham and LeRoy Weir, of Cleveland.

The largest sectional championships are held by the Metropolitan Squash Racquets Association (of New York) where singles and team title events are played in classes A, B, and C, mixed and men's doubles, and veterans. Divisional championship contests were held in New Jersey, Westchester and New York State, and by the Intercollegiate Association. There were also invitation tourneys of the Rockaway Hunting Club, Nassau Country Club, Heights Casino, Round Hill Club, Union League Club, Squash Club and inter-city matches. There is a women's division of the Metropolitan Association, of which Mrs. Alfred W. Paine is president. The women's singles championship, held at the Junior League, was won by Mrs. Amy J. Lamme, Jr., of the Apawamis Club, over Miss Margaret Bostwick, of the Ardsley Club. (J. B. P.)

**Great Britain.**—The growth of the popularity of squash racquets was maintained at a steady rate during the past year. Thirty new clubs were formed, making a total of approximately a thousand squash racquets clubs in England open to the public. Cricket and lawn tennis clubs, too, are finding the introduction of squash a most satisfactory method of sustaining the interest of their members during the winter months.

F. Amr Bey remains as the unequalled exponent of the game. He has won the open championship, and the amateur championship, his contest with J. Dear in the former event being generally considered productive of a standard of play touching new heights of brilliance. J. Dear is the professional champion, while Miss M. Lumb is the holder of the ladies' championship. The county championship was won by Sussex, who beat Cheshire in the final, and the University match by Cambridge. (X.)

**Canada.**—The Canadian championships in squash racquets are also open to Americans. The singles championship, played in Hamilton, Ont., was won by Neil J. Sullivan, 2nd, over Cyrus H. Polley, of Buffalo. The doubles title tourney was played in Montreal, where Arthur H. Barker and Stanley Galowin, both of New York, defeated John Cornish and A. M. Sonnabend, both of Boston. This competition is for the A. F. Crichton challenge cup. (J. B. P.)

**Stainless Steels:** see CHROMITE; COLUMBIUM.

**Stalin, Joseph Vissarionovich** (1879— ), Russian statesman and dictator; born at Gora, Georgia, became an associate of Lenin in revolutionary work in Tsarist Russia, and was deported to Siberia in 1912. After the 1917 revolution, he became editor of *Pravda*, and in 1922 was appointed general secretary of the Communist party of Soviet Russia, succeeding Lenin on the latter's death in 1924 as the principal figure and virtual dictator of the Soviet Union, a position which he consolidated by the expulsion of Trotsky and his followers.

After the expulsion of Rykov and Bukharin from the party in 1937, Stalin, in a speech to the central committee of the party on March 3, denounced the Trotskyist movement as "an un-

principled organization of wreckers employed by foreign capitalist States" aiming at the destruction of Soviet achievements, and working hand in hand to that end with Germany and Japan. In June, the condition of Stalin's heart gave rise to some anxiety, and he was visited by a Vienna physician. In November it was proposed to recognize his position in relation to the Russian nation by conferring on him the new title of "possadnyik," or "protector" of the State. At the elections in December, for the new Supreme Council of the U.S.S.R., Stalin was nominated for a large number of constituencies, and returned for a division of Moscow, after declaring on the day before the polling that Soviet Russia's first general election, in which no candidate not approved by the Government was allowed to stand, was unexampled in history as the freest and most democratic election ever held in any country.

**Stamp Collecting:** see PHILATELY.

**Stanford University** (The Leland Stanford Junior University). The year 1937 was one of new construction at Stanford university. A memorial hall, containing a main theatre so constructed as to seat from 500 to 1,700, a smaller rehearsal theatre, theatre workshop, offices and classrooms, was completed. Its cost of \$600,000 came as a gift from faculty, alumni and students. As a memorial to their son, Mr. and Mrs. Howard Frost of Los Angeles presented the Laurence Frost Amphitheatre, an outdoor sunken oval completely surrounded by trees, and seating 8,000. Under construction is a School of Education building, a gift from Dean and Mrs. Ellwood P. Cubberley of Stanford university, at a cost of \$575,000. Additions were also made to Lagunita Court, a dormitory for women; and the former assembly hall was remodeled to house the rapidly growing Graduate School of Business with its Institute of Industrial Relations.

A "university division" was created for students of good ability who have attended Stanford or who transfer from other institutions, and who desire to obtain the Master's or other advanced or professional degrees without having to meet the requirements for the A.B. degree.

The faculty in 1937 numbered 480, the students 4,130, of whom approximately 1,100 were women and 1,035 graduates. With each year there is growing emphasis upon advanced work and the residence features of a university that has a campus of several thousand acres available for sports and open-air life.

(R. L. W.)

**State, Department of:** see GOVERNMENT DEPARTMENTS AND BUREAUS.

**State Legislation.** In retrospect, the year 1937 was characterized by four major trends in State legislation: (1) increased social legislation of all kinds; (2) a search for new sources of income and a continuance of emergency taxes; (3) reorganization and improvement of State administrative machinery, and (4) added impetus to the movement for interstate co-operation.

**Social Legislation.**—In the field of social welfare the legislation indicated a general shift from the special significance attached in 1935 and 1936 to securing enactment of social security laws to a concern over administration of those laws. This was reflected in the establishment in 18 States of welfare or public assistance departments and the reorganization of such departments in four other States. In general, the State agency is responsible for supervision of standards, while actual administration is lodged in the county or local unit.



The year's enactments brought every State within the list of those which have an unemployment compensation law. Virginia is the only State, which, at the close of the year, did not have a federally approved plan either for old age assistance, aid to dependent children, or aid to the blind. Many of such State aid plans go beyond the minimum standard set by the Federal Government, and in general, they broaden the scope of public assistance and indicate a consciousness of State responsibility for the needy hitherto exhibited only through State institutions.

In the field of State labour law several important developments occurred. The creation by five States of State labour relations boards modelled after the Federal law brings a new type of labour law to the States. The enactment by Pennsylvania of a general 44-hour a week maximum hour law applicable to men as well as to women is the most far reaching ever enacted. A general minimum wage law applicable to men as well as to women, adopted in Oklahoma, is the first of its kind. Workers in many occupations in widely scattered States will benefit by shorter hours, safer working conditions, better pay, increased disability compensation, and machinery for improved labour relations as a result of State labour legislation during the year. Progress in the child labour field was marked by the adoption of a basic 16-year minimum age in North and South Carolina, by the action of Missouri, New York and Vermont to prohibit intrastate sale of products of child labour, and by other increased restrictions on child labour adopted in a number of States.

**Housing.**—During the year 11 States enacted new housing authority laws, and nine States amended existing statutes. Thirty jurisdictions now have housing authority legislation, although there are two of them which apply only to a single city. Rhode Island alone does not grant the right of eminent domain to its authority. An important recent addition to housing authority statutes is a law which empowers cities and other local governmental units to co-operate with their housing authorities in essential ways.

**Planning and Zoning.**—Greatest progress in planning and zoning was made in the enactment of enabling legislation for local subdivisions. Two States provided for county and metropolitan planning boards, while enabling legislation for city boards was passed in six States. Several States made provisions for county and township zoning, although city zoning continues to have wider acceptance.

**Education.**—While school finance continued to be the major educational problem facing the States, proposals to improve the teacher's professional status received considerable attention and approval. Ten States enacted new or revised teacher tenure legislation, while new or revised teacher retirement laws were passed in 17 others. Other important teacher welfare legislation included the enactment of minimum salary laws in four and the revision of certification laws in eight States.

**Health.**—The most recent development in public health has been the approval given by the public and by officials to the problem of social disease. A reflection of this interest has been the enactment of a number of hygienic marriage laws. Under these, either one or both applicants for a marriage licence are required to obtain a medical certificate indicating freedom from venereal disease before the licence may be issued.

**Crime Control.**—A milestone in the work of crime control has been the rapid acceptance and enactment by the States of one or more phases of the four-point legislative program sponsored by the Interstate Commission on Crime of the Council of State Governments. This includes model bills to permit close pursuit by police across State lines, simplified extradition procedure, reciprocal supervision of out-of-State parolees and probationers, and simplified procedure for securing out-of-State wit-

nesses in criminal proceedings. The commission is working out administrative procedures for these laws, and is now attacking the control of firearms. Improved parole systems were provided for in several States. At the same time police or highway patrol systems were established or enlarged in all but three States which have hitherto been without them.

**Tax Legislation.**—Expanded social welfare programs, placing increased burdens on State budgets, have necessitated new sources of revenue. Of the two most fruitful sources of State income (sales and gasoline taxes), the gasoline tax continued the most popular and four jurisdictions raised their rates on this tax while several others continued emergency rates. Two new States put sales taxes into effect, and several others raised their rates or acquired accompanying use taxes. Colorado and Maryland entered the income tax field, placing levies on both personal and corporate incomes. At the same time a few upward adjustments were made in income tax rates. Six States adopted new or revised chain-store taxes, though this is still not an important source of income.

**State Administration.**—Kentucky and Tennessee completely reorganized their governmental machinery and placed more direct responsibility over department heads in the governor. Partial reorganizations were made in Connecticut, where the fiscal procedure was changed, and in Wisconsin where the governor was given power to shift boards and departments as it becomes necessary in order to improve management methods. Surveys of particular departments were made in several other States. Arkansas, Connecticut, Maine, Michigan, and Tennessee adopted civil service systems for their State employees. This is a greater number of civil service acts in one year than the total number which had been approved in the preceding 25 years.

**Interstate Co-operation.**—Significant from the standpoint of interstate and Federal-State relations, has been the rapid growth of the Council of State Governments through the establishment of commissions on interstate co-operation by the States. This movement, which has taken place only within the last three years, received such impetus during 1937 that 35 States now have such commissions and each of these States has by legislative action incorporated the Council of State Governments as a part of its governmental machinery, and established it as a governmental agency. A typical commission of this type is composed of five members of the State senate, five from the house of representatives, and five administrative officers appointed by the governor.

The Council seeks to develop better co-ordination and more active co-operation between groups of States in the various regions of the United States, and also between the 48 States as a whole. It also seeks to bring the State governments into better adjustment with the Federal Government and with county and city governments. It serves as the official research agency and clearing house for the Governors' Conference, the American Legislators' Association, the National Association of Attorney-Generals, and the National Association of Secretaries of State.

(H. W. To.)

**Steamships:** see SHIPBUILDING; SHIPPING, MERCHANT MARINE.

**Steel:** see IRON AND STEEL.

**Sterilization.** In considering prevention of reproduction in the human species, it must be determined whether or not it is planned to produce temporary or permanent sterility. Technique necessarily differs depending on this point. Again certain conditions may exist which necessitate castration to prevent all sex impulses, as is seen in certain psychoses.

The endeavour of surgical procedures to produce sterilization



is to prevent fertilization of the ovum by the sperm. This is produced by placing barriers in the Fallopian tubes. To date no methods have proved infallible. The method of crushing the tube and ligating with catgut suture material is probably the simplest technique, but is attended by many failures. A variation of this is to pick up a loop of the tube, crush it with forceps and tie both sides with catgut or silk. An improvement in this is to amputate the loop distal to the ligature. This seems to provide a more dependable technique which is particularly simple to carry out.

Another method has been to cover the far end of the tube with the membrane lining the abdominal cavity—peritoneum—and bury the uterine end in the musculature of the uterus. This has not proved so sure of results. The technique of excising the tube at the uterine cornu with a wedge-shaped section of muscle which surrounds it has been satisfactory in the experience of many surgeons. Some have removed the fundus of the uterus to accomplish this. The tubal procedures may permit of subsequent operation to restore the possibility of pregnancy if circumstances make this desirable. The uterine techniques do not.

In recent years the sterilization of the female has been carried out by cauterization of the tubal openings at the cornua of the uterus. This has been accomplished by the use of ingeniously constructed electrical cautery tips which are introduced through the cervix and uterine cavity. The advocates of this technique are enthusiastic in its support. Sterilization may be accomplished by the use of the Röntgen ray and radium. This technique requires the services of one thoroughly familiar with these agents and skilled in their use. The method is not certain in the production of sterility in all cases.

Experimental studies in the field of biologic sterilization with hormones have proved unsatisfactory. There seems to be evidence that this may be attended with danger. The work dealing with specific antibodies or spermatoxins has not as yet been developed to the point where authoritative conclusions may be formulated. It would seem that this may be possible.

In the male the resection of the duct from the testicle (vas deferens) has been the method of choice because of the technical simplicity of the procedure. There is an occasional failure due to the presence of supernumerary ducts. (J. R. BL.)

**Stevenson, James Alexander** (1881–1937), British sculptor; born at Chester, October 18. He studied at the Royal college of art, London, under Prof. Lanteri, won the college's travelling scholarship, and was also Landseer scholar in sculpture at the Royal academy schools. From 1911 to 1914 he was modelling master at the Regent street polytechnic. He exhibited at the Royal academy, the Paris salon, and the International society. His bust of Sir Frederick Kenyon is in the board room at the British museum, and that of a Roman emperor ("Imperator") is in the Tate gallery. Among his other works was the War Memorial to Devon regiments in Exeter Cathedral. To avoid confusion with another sculptor with a name identically the same except for its spelling, he used to sign his work by the *nom de plume* of "Myrander."

**Stieglitz, Julius Oscar** (1867–1937), American chemist who was among the first to apply the electron theory of valence in organic chemistry. His other researches included catalysis, molecular re-arrangement velocities, saponification of imidoesters and positive halogens. He was born in Hoboken, N.J., May 26, 1867, and received the Ph.D. degree from the University of Berlin in 1889. In 1892 he joined the faculty of the newly founded University of Chicago, becoming a

full professor of chemistry in 1905, chairman of the chemistry department in 1915 and director of the university laboratories (1912–24). During the World War, he served as special expert to the Public Health Service, chairman of the committee on synthetic drugs and vice-chairman of the division of chemistry of the National Research Council. He was president of the American Chemical Society in 1917 and of the Chicago Institute of Medicine in 1918. The American Chemical Society awarded him the Willard Gibbs Medal in 1923. His death occurred in Chicago, Jan. 10, 1937.

**Stock Exchanges.** Under the new system of governmental regulation of stock exchanges, occasioned by the Securities Exchange Act of 1934, numerous new rules have been adopted annually. During 1937, the many changes effected may be grouped under three main headings, namely (1) margin requirements, (2) commissions charged, and (3) listing requirements and supervision of members.

**Margin Requirements.**—During 1937 the New York Stock Exchange adopted regulations (1) to prohibit any member of the Exchange or a partner of any firm "from assuming for his own account at any moment a position in listed stocks through transactions on the Exchange that would make the equity in the account less than 55% of the long position, plus the usual margin on any short position," and (2) to prohibit any firm "from assuming for its own account at any moment a position in listed stocks . . . which it could not finance" in accordance with governmental regulations. By Government action also, following the drastic decline in securities during the year, margin requirements on long accounts were reduced to 45%, and on short accounts were placed at 50%.

**Commissions Charged.**—On Dec. 29, three changes were approved, to become effective Jan. 3, 1938, namely (1) a new schedule of commissions, increasing non-member commissions by an estimated 11% and member rates by 5%, (2) a rule permitting members who also hold membership on another exchange to charge whatever rates of commission may be prescribed by the other market, and (3) a service charge on inactive accounts.

**Listing Requirements and Supervision of Various Groups of Members.**—Changes in this respect were: (1) a detailed set of instructions to specialists with reference to dealings on the floor of the Exchange in stocks in which they are acting as specialists; (2) an amendment giving the committee on odd lots and specialists authority to supervise the activities upon the floor of members trading in stocks for their own account or otherwise, whereas previously the committee's supervision was limited to odd lots and trading by specialists; (3) revision of the requirements of the committee on stock list "to include additional protective provisions for mortgages, indentures and deeds of trust and for trustees of bond issues"; and (4) arrangement for a study of secondary distribution by a special committee "to co-ordinate and develop the policy and rules of the various standing committees in so far as they relate to the question of secondary distribution of listed securities and to trading in listed securities off the floor of the Exchange."

**Stocks and Bonds.**—The importance of the New York Stock Exchange as a major national market is shown by the huge volumes of listings of securities. For stocks, on Dec. 1, 1937, such listings aggregated 1,252 separate issues, totalling 1,408,078,066 shares with a market value of \$40,716,032,190. Listed bonds, on the same date, represented 1,375 issues, with a par value of \$47,175,452,551 and a market value of \$42,109,154,661. The number of issuing corporations or governmental units totalled 1,314 for stock issues and 677 for bonds. On Jan. 1, 1937, prior to the severe break in price levels during the later months of the year,



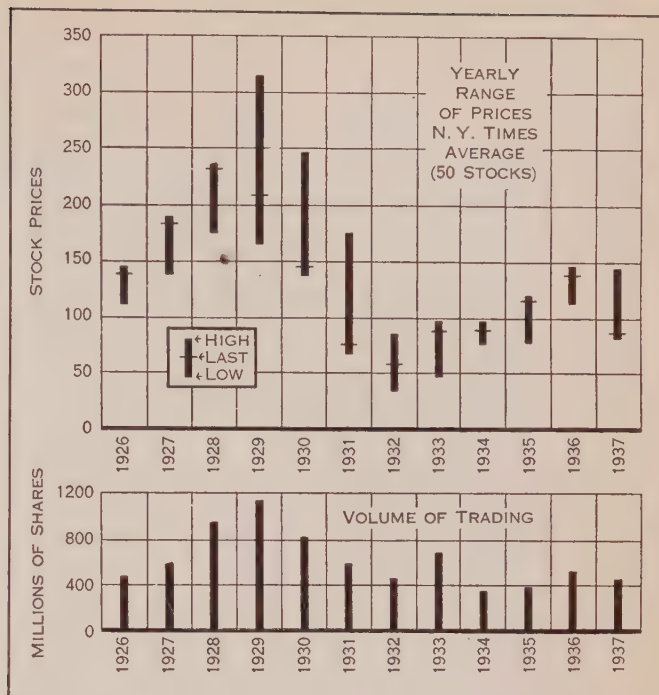
the aggregate market value of all listed stocks and bonds stood at \$104,931,721,722, of which total stocks represented \$59,878,127,946 and bonds \$45,053,593,776. Roughly speaking, the New York Stock Exchange serves as the market place for approximately a fourth of the nation's total wealth. Of the aforementioned totals, foreign stock listings on Dec. 1 aggregated only 38,401,142 shares with a market value of \$952,899,285, while private and public bonds of foreign nations stood at \$4,854,865,000 par value, with a market value of \$3,021,037,000.

Sales of stock on the New York Stock Exchange for 1937 totalled 409,468,885 shares, and for bonds \$2,792,531,000. For stocks the ratio of sales to listings amounted to 27.55% for the first eleven months of the year, the monthly average ratio varying from a minimum of 1.18% for June to a maximum of 4.30% for January. For bonds the ratio of sales to listings for the same eleven months amounted to 5.53%, the monthly average varying from .31% in August to .74% in January. Volume of sales was at a very low ebb during 1937, despite the severe decline in prices, the stock total being only 409,000,000 as compared with 496,000,000 shares for 1936, and bond sales only \$2,792,000,000 as compared with \$3,578,000,000 for 1936. To an increasing degree during recent years, the security market has become more and more a cash market. Net borrowings of New York Stock Exchange members on collateral, for example, amounted to only 1.69% of the market value of listed shares on Dec. 1, 1937, whereas at the same date for 1935, 1934, 1930, 1929, and 1928, the ratios were respectively 1.88%, 2.45%, 4.06%, 6.32% and 9.66%.

With respect to the New York Curb Exchange, sales during 1937 totalled 104,178,804 shares, as compared with 134,843,049 shares for 1936, and bond sales \$442,361,000 as compared with \$823,050,000 for 1936. In other words the sales on this exchange, the second largest organized security market in the Western Hemisphere, amounted to about one-fourth the stock sales on the New York Stock Exchange and to about one-sixth of the bond sales. The decrease in stock sales, as compared with 1936, was about the same as that experienced by the New York Exchange, although the decline in bond sales was considerably greater. At a recent date, 1934, 1,552 different corporations had security issues listed on the New York Curb Exchange. Of these corporations 1,117 had listed 783,582,441 shares, with a par value of \$5,661,151,748, as well as millions more shares without a par value. Mention should also be made of the San Francisco Curb Exchange, and the exchanges at Baltimore, Boston, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, Philadelphia, Pittsburgh, St. Louis, and San Francisco. Collectively, these exchanges are relatively small in comparison with the two major New York exchanges. The largest of these exchanges—the Chicago Exchange—has weekly share transactions equal to only about 3% of the New York Stock Exchange's weekly total, while for three other exchanges collectively—Boston, Baltimore and Cincinnati—aggregate weekly transactions amount to considerably less than 1% of the New York Stock Exchange's weekly total.

(S. S. H.)

**London.**—After rising uninterruptedly since the middle of 1932 industrial share prices fell between 20 and 25% during 1937, and the London stock exchange was forced to adapt itself to a reduced volume of trading, and a succession of shocks which had no equal since the depression. Despite severe technical strain in May and again later in the year, the stock exchange demonstrated its great underlying strength, and the two or three failures which occurred were all of insignificant dimensions. In April, the erroneous "gold scares" provided the market's first test; they were followed in a few weeks by the first version of the National Defence Contribution, which brought stock exchange business, including new capital issues, to a standstill.



TRADING IN STOCKS on the New York Stock Exchange, 1926-1937: yearly range of prices and number of shares sold, exclusive of odd-lot and stopped sales

Finally, the break in Wall street at the beginning of September again depressed prices in London. A substantial volume of forced selling was released by the closing of impaired margin accounts, and, but for co-operative efforts by important stock exchange firms to support intrinsically sound, but temporarily weakened, positions, the situation might have developed seriously. By the end of the year, equity share prices were discounting some recession in the high level of industrial activity.

Unlike the New York stock exchange, the London stock exchange provides no measure of turnover. All the evidence, however, suggests that the volume of business had fallen to such low levels at the end of the year that brokers were fortunate to cover their expenses. For the investor, last year's fall in industrial share values absorbed 23% of his capital. The fall in a mixed portfolio of gilt-edged, industrial debentures and preference shares, however, was no more than 5½%. Gilt-edged stocks, in fact, recovered from the low levels touched during the summer.

According to the report of the London stock exchange committee for the year to March 24, 1937, the nominal amount of securities quoted in the official list was £17,846,746,382, an increase of £322,261,009 over the previous year. During that year, 1,912 applications for permission to deal in new securities were granted, in respect of nominal capital totalling £697,174,206. The question of registration of stock exchange dealers was raised in the Board of Trade committee's report on "share-pushing," published in August. The committee decided against the restriction of share dealings to stock exchange members, on the ground that it was not prepared to recommend the grant of a charter to the stock exchange. The proposal to register share dealers, however, would not apply to the members of recognized stock exchanges, who would be exempt.

(R. E. B.)

**Stocks.** The outstanding development in the American stock market during 1937 was the generally drastic decline of prices. For all of the major classes of stocks the record for March, 1937, represented the highest monthly price level since the bottom depression figures of 1932. Optimism was prevalent everywhere and all stock market actions seemed to indicate clearly



## Security Market Price

	Railroads 20 stocks		Industrials 50 stocks		Public Utilities 20 stocks		Copper and Brass 7 stocks	
	1936	1937	1936	1937	1936	1937	1936	1937
Jan. . . . .	47.0	*58.8	129.1	*168.0	88.4	*100.9	113.4	227.4
Feb. . . . .	52.3	*60.8	136.6	*174.5	91.1	*97.2	132.8	239.1
March. . . .	51.3	*64.8	149.7	*174.6	90.1	*91.8	144.6	254.0
April. . . . .	50.6	*62.1	141.5	*163.9	88.6	*85.5	153.1	230.6
May. . . . .	47.7	*60.6	133.9	*156.8	85.9	*79.4	136.7	204.8
June. . . . .	50.2	56.0	138.8	152.1	90.3	74.4	142.1	207.5
July. . . . .	54.6	*55.4	146.0	*161.2	98.8	*81.7	148.1	218.0
Aug. . . . .	57.0	*53.3	149.0	*163.9	98.5	*80.7	163.4	232.8
Sept. . . . .	58.6	*44.1	151.1	*140.7	97.3	*70.8	168.8	196.1
Oct. . . . .	62.2	*36.7	159.8	*119.9	98.9	*62.6	183.1	139.2
Nov. . . . .	60.8	*33.1	166.2	*107.8	96.6	*63.3	218.7	115.4
Dec. . . . .	*57.3	..	*163.4	..	*96.6	..	215.6	..

\*An average for the month based on daily closing prices.  
(Source of data—Standard Trade and Securities Statistical Bulletin—Standard Statistics Company, Inc.)

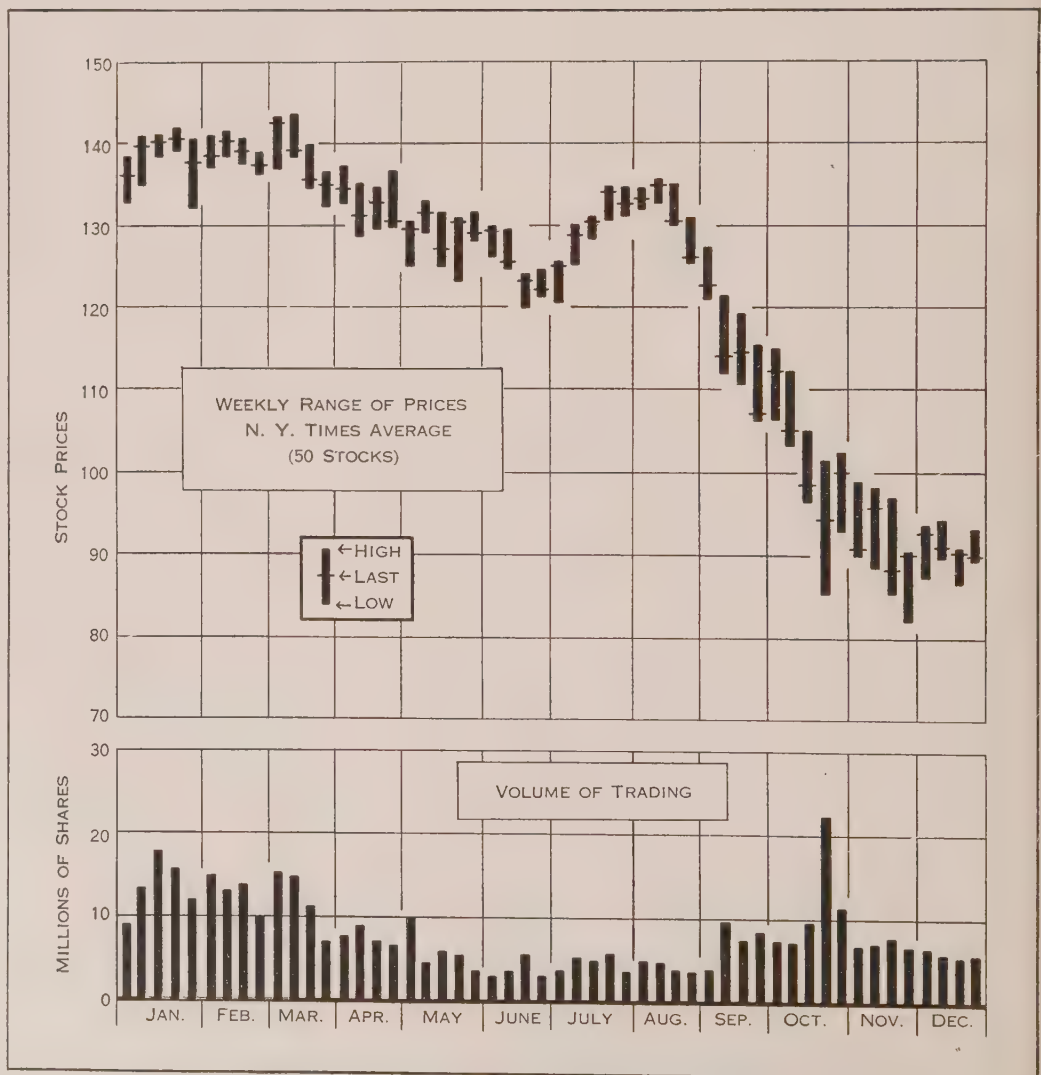
the nation's emergence from the 1930-36 depression. However, near the close of March security markets commenced to waver, although for the following five months much resistance to the decline was in evidence despite the abundance of disconcerting news. With the beginning of August the decline assumed large and rapid proportions, despite surprisingly small dealings. During the next three months, September to November inclusive, the decline took on the proportions of a collapse. In fact, there are few instances on record where a larger percentage decline has been experienced within so short a time. However, following November the price level was substantially maintained to the end of the year.

The extent of the collapse is indicated by the averages published by the Standard Statistics Company. Thus a representative list of 50 industrial stocks experienced a decline from 163.9 for Aug. 1937, to 107.8 for November, or 34% within about three months. The November average price of 107.8 may be compared with 174.6 for March of 1937, the high point of the year, with 129.1 for Jan. 1936, and with 53.5, the yearly average for 1932, the bottom year of the depression. Twenty representative railroad stocks declined from 55.4 in July to 33.1 for November, or nearly 40½%, the November average (33.1) comparing with 64.8 for March, the high of the year, with 47.0 for Jan. 1936, and with a yearly average of 26.8 for 1932. Twenty representative utility stocks slumped from 81.7 in July to 63.3 for November, or 23%, the November average comparing with 100.9 for January, the high of the year, with 88.4 for Jan. of 1936, and with a yearly average of 85.7 for 1932. Similarly, a representative list of seven copper and brass stocks underwent a decline, during the period from August to November, from

232.8 to 115.4 or 50%, the latter monthly quotation comparing with 254.0 for March of 1937, and with 113.4 for January of 1936.

**Reasons for the Collapse.**—To many the unfortunate decline in stock market values seemed a mystery. The liquidation of the previous six years, along practically all business lines, had been so drastic and the abundance of funds so great and so cheap (call and time loans averaging constantly in New York at 1% and 1½%) that it was difficult to construe fundamentals as other than highly favourable to a long continued bull market. Yet adverse news piled up so plentifully during 1937 as to destroy the confidence of the investment and speculative community.

All through the year basic industries were plagued with labour upheavals, causing widespread disorganization in production as well as severe financial loss. Corporations felt more and more the burden of taxes levied on their undistributed profits and capital gains, thus greatly handicapping the expansion of industrial facilities. War and the prospects of war filled the newspapers continually throughout the year, with respect to nearly all the leading nations of Europe and Asia. At home there was an inability to balance the national budget, the spectre of a further increase in tax burdens, a governmental tendency to compete with private industry, and a general governmental attitude to wage war upon "big business." Governmental credit policies also tended to tighten credit to a degree that made it necessary for banks to secure funds by selling government securities. Moreover, many



TRADING IN STOCKS on the New York Stock Exchange in 1937: weekly range of prices and number of shares sold (exclusive of odd-lot and stopped sales)



## STORM TROOPS—STRATOSPHERE

political measures were either launched or threatened, which involved vast potential powers over business to such a degree as to constitute an unsettling influence upon business until the measures could be finally disposed of. Collectively, the bear news of the year was so large in volume and so sinister in its bearing upon the future that investment and speculative confidence cracked under the strain.

**Number, Volume, and Amount of Stocks.**—At the close of 1937, according to the New York Stock Exchange Bulletin, the total of stocks listed on the New York exchange, stood at 1,408,078,066 shares, valued at \$40,716,000,000. Of this total United States stocks aggregated 1,369,676,920 shares valued at \$39,763,132,905, and foreign stocks 38,401,142 shares valued at \$952,899,285. The total of shares were distributed over 2,293 separate American issues, and 334 foreign issues, representing a total of 1,145 issuing corporations. Total sales on the New York stock exchange during 1937 amounted to 409,468,885 shares (*New York Times*), as compared with 496,063,099 shares in 1936, and 1,124,991,490 shares in 1929, the largest total on record. The approximate value of the shares dealt in may be arrived at by multiplying the number of shares traded in during 1937 by the average yearly stock price index of all listed shares, as reported by the New York exchange for 1937, viz. \$50.62 per share. On the New York curb exchange, the second largest American security market by far, sales for 1937 amounted to 104,178,804 shares, as compared with 134,843,049 for 1936, and the high record of 474,000,000 shares for 1929. For other exchanges, data is not available. These markets, however, are relatively unimportant in comparison with the two major New York exchanges. Even for the Chicago exchange, the most important non-New York exchange, weekly transactions during 1937 totalled only about 250,000 shares, as compared with 8,200,000 shares for the New York stock exchange. (See also STOCK EXCHANGES.) (S. S. H.)

**Great Britain.**—On the London stock exchange, 1937 was a year of many vicissitudes. It came at the end of the recovery period, and by the beginning of the year there were many of the signs which commonly occur when recovery is nearing its climax. Already British Government securities were beginning to drop, for they opened in Jan. 1937, at some 3.5% below their average for the peak year, 1935. This showed that the long-term rate of interest was rising, and that the demand for capital was beginning to catch up with the supply. Meanwhile, there was a strong and partly speculative demand for securities and commodities, influenced to some extent by warnings and suggestions that world rearmament might make heavy inroads upon supplies of certain raw materials. On the other hand, there were indications that certain sections of the stock exchange had become top-heavy. Industrials and home rails were already beginning their decline.

British Government securities fell by about 5.5%, during the latter half of the year. Defence borrowing and expenditure, realizations by the banks in order to meet the growing demand for bank loans, and the prevailing uneasiness were the main causes of this decline.

They rallied slightly during the latter half of the year, partly because the general market weakness had begun to drive investors out of equities into British Government stocks. The net fall during the year was not quite 4%.

(N. E. C.)

**Storm Troops:** see BROWN SHIRTS.

**Storstrøms Bridge:** see BRIDGES; DENMARK: *History*; RAILROADS: *Scandinavia*.

**Straight-Line System:** see CLOTHING INDUSTRY.



ANOTHER STRATOSPHERE FLIGHT by Professor Auguste Piccard was prevented when his balloon was destroyed by fire as it was being inflated on May 25

**Straits Settlements,** population (1931) 1,114,015, area 1,531 sq.mi., is one of the three main subdivisions of British Malaya, the others being the Federated and Unfederated Malay States (*q.v.*). It includes the two main ports of Malaya, Singapore and Penang. Its subdivisions are as follows: Singapore island; Penang island; Province Wellesley; Malacca; Pangkor; Christmas island; Labuan and the Cocos islands. It is administered by a governor with an advisory council (Governor, Sir Thomas Shenton Whitelegge Thomas). Chinese predominate in the mixed population of the colony, with Malays second and Indians third. Singapore (*q.v.*) and Penang are the outlets for the rich Malayan hinterland and carry on an important export trade in tin and rubber. Straits dollar (58.75 American cents). (W. H. CH.)

**Strathcarron, Ian Macpherson,** 1ST BARON (1880–1937), of Banchor, British lawyer and politician; born at Newtonmore, Inverness, Scotland. Ian Macpherson was educated at George Watson's college and Edinburgh university, and was called to the bar in Edinburgh. After failing to secure parliamentary election at the two 1910 general elections, he was returned for Ross and Cromarty in 1911 and sat for that constituency as a Liberal until 1931, and as a Liberal-National from 1901 to 1935. He was under-secretary of State for War, 1916–19; chief secretary for Ireland, 1918–20; and minister of pensions, 1920–22. He was made a P.C. in 1918, was created a baronet in 1933, and was raised to the peerage in 1936. He took silk in 1919, and was recorder of Southend from 1931 till his death. Lord Strathcarron, besides being a memorable parliamentarian and a skilful barrister, was a brilliant Gaelic scholar. His publications include *Life at a Scottish University*; *Satire in Celtic Literature*; *The Land Question*. He died in London, Aug. 14, 1937.

**Stratosphere.** To that part of the earth's atmosphere which is bounded beneath by the troposphere, above by the ionosphere, and thus lies at an altitude of 12 to 30km. (7.5 to 18.5mi.) Teisserenc de Bort has given the name of stratosphere. Whereas the troposphere is chiefly characterized by vertical movements of the air and the resultant temperature-



variations and precipitations, in the stratosphere only slight vertical air-movements occur; consequently, only slight variations of temperature and no clouds or precipitations.

The downward limit of the stratosphere is characterized by the fact that the temperature, which in the troposphere decreases more or less in direct proportion to the increase in altitude, suddenly becomes constant at a very sharply defined (not always the same) altitude. The altitude of this limit is subject to strongly marked fluctuations, depending on weather, time of year, and latitude. In the tropics it is at an altitude of 16km. (10 miles). In temperate latitudes at an average of 12km. (7.5 miles), though in exceptional cases it may fall to 5 or 6km. (3 or 4mi.), even in temperate latitudes. In summer it is usually at a greater altitude than in winter. In arctic regions the limit is at a lower altitude, about 8–10km. (5–6 miles). In the language of air-travel, these fluctuations are ignored, and everything above 12km. (7.5mi.) is spoken of as the stratosphere. The lowest part of the stratosphere has the same temperature (whatever that may be at the time) as the uppermost layer of the troposphere. The higher the limit, the lower the temperature. Accordingly, we find the lowest natural terrestrial temperatures in the tropics—about 75° below zero C. (135° below freezing-point F.). In temperate latitudes the temperature of the stratosphere comes to about 55° below zero C. (99° below freezing-point F.: lower in summer than in winter), and in arctic regions to about 45° below zero C. (81° below freezing-point F.). As one goes higher in the stratosphere, one finds a very gradual increase of temperature. Up to 30km. (18.6mi.), the increase reaches 5°–10° C. (9°–18° F.).

The movement of the air is horizontal and very even. The wind-velocity is usually highest at the lowest levels of the stratosphere and the highest levels of the troposphere; but even in the upper layers of the stratosphere, storms at 200km. an hour (125 m.p.h.) have been observed.

**Composition of the Stratosphere.**—If there were no vertical air-movements at all in the stratosphere, after a very long time the composition of the stratosphere would change in such a way that the lighter constituents of the atmosphere would increase in proportion to the heavier. We should find a higher proportion of helium and nitrogen, a smaller proportion of oxygen. But the slight vertical movements are sufficient to avert such a separation of constituents, or at any rate to keep it within such narrow limits that it is difficult to detect it by analysis and is certainly without any practical importance whatever in connection with air-travel. Strangely enough the carbon-dioxide content is much greater in the stratosphere than in the troposphere.

The aqueous content of the stratosphere is interesting, and is of the greatest importance in connection with air-travel. As the tension of saturated water-vapour at 50° below zero C. (90° below freezing-point F.) is very slight, it was supposed at one time that the stratosphere must be very dry. This view was supported by the fact that in the stratosphere clouds are practically never observed. But more recent investigations have shown that there are parts of the stratosphere which contain quite considerable quantities of supersaturated water-vapour. (Analysis of air-samples has established supersaturation-factors of more than 10.) This supersaturation is possible only when the air is completely free from dust (the air must therefore have been previously freed from dust by cloud-formation at a very high temperature). When dust makes its way into these super-saturated regions, clouds of frozen vapour are formed, and in certain cases, for example after volcanic eruptions or violent explosions, the precipitation reaches the earth as rain. Aeroplanes with the smoke from their engines can start long cirrus-clouds. On aeroplane-flights there is produced at the same time a deposit of ice, which so alters the shape of the wings and encumbers the aeroplane that flying becomes

impossible. This danger is greatest in the uppermost layer of the troposphere and the lowest layer of the stratosphere. As the altitude increases, the danger rapidly diminishes.

Air-pressure in the stratosphere diminishes continuously as the altitude increases, according to the well-known barometrical formula; in fact, owing to the low temperature, it halves itself every 4.4km. (2.7 miles). Measured barometrically it is 140mm. (5.5in.), at an altitude of 12km. (7.5mi.); at an altitude of 16km. (10mi.), 76mm. (3in.)= $\frac{1}{10}$  atm.; at 20km. (12.5mi.), 40mm. (1.6in.), and at 31km. (19.3mi.), 7.6mm. (.3in.)= $\frac{1}{160}$  atm. Consequently, although the stratosphere is far more extensive than the troposphere, its mass is only 17% of the atmosphere, against the troposphere's 82% and the ionosphere's 1%.

At great altitudes, an aeroplane, on account of the diminished density of the air, must fly faster than at sea-level to maintain lifting-power. But since, for the same reason, the air-resistance is less, an aeroplane can maintain a high speed with less power than at lower altitudes. Consequently, air-liners tend to fly higher and higher. There is reason to suppose that there will be progressive development on these lines, and that the air-liner of the future, on routine flights will normally, for long distances, aim at altitudes of about 16km. (10mi.), and that at these altitudes speeds of 700 to 800km. an hour (400 to 500 m.p.h.) will have to be regarded as normal rates of travel. Of course, at such altitudes pilots and passengers must be enclosed in air-tight pressure-resisting cabins, because even with oxygen-apparatus human beings cannot live at so low a pressure as  $\frac{1}{10}$  atm. (A. Pr.)

**Streamline Trains:** see RAILROADS.

**Strikes and Lock-outs.** The United States, Canada and Great Britain publish current statistics of strikes and lock-outs, their causes and results, together with detailed reports upon the more important strikes of each year. Most of the other nations report them less regularly; some not at all. The Canadian Department of Labour published a report on strikes throughout the world in the *Labour Gazette*, March 1937. The most recent statistics then available ended in 1935 for the following countries: Finland, Denmark, Sweden, the Netherlands, Poland, Czechoslovakia, Estonia, Hungary,



FARMERS JOINED NON-STRIKERS in storming a Hershey, Pennsylvania, milk chocolate plant and evicting sit-down strikers when the strike closed the farmers' market for milk



Table I. Number of Strikes, Workers Involved, and Man-days Lost, by Months, January 1936 to November 1937, with Estimates for October, November, December, 1937

(United States Bureau of Labor Statistics figures)

Year and Month	Number of Strikes					Workers Involved in Strikes		Man-days Idle During Month
	Continued from Preceding Month	Beginning in Month or Year	In Progress During Month	Ended in Month	In Effect at End of Month	Beginning in Month or Year	In Progress During Month	
1936 Total for Year		2,172				788,648		13,901,956
January	84	167	251	149	102	32,406	59,153	635,519
February	102	148	250	131	119	63,056	89,735	748,491
March	119	185	304	174	130	75,191	122,162	1,331,162
April	130	183	313	179	134	65,379	95,526	699,900
May	134	206	340	219	121	72,824	123,030	1,019,171
June	121	188	309	158	151	63,429	133,531	1,327,678
July	151	173	324	197	127	38,017	125,281	1,105,480
August	127	228	355	210	145	68,752	118,268	911,216
September	145	234	379	236	143	65,994	130,875	1,063,100
October	143	192	335	219	116	100,845	148,570	1,953,878
November	116	136	252	126	126	70,116	157,007	1,940,628
December	126	132	258	158	100	72,639	184,859	2,065,733
1937 January	100	172	272	133	139	108,697	214,344	2,720,553
February	139	209	348	203	145	112,095	239,109	1,519,850
March	145	605	750	504	246	287,365	355,096	3,276,419
April	246	522	768	490	272	220,347	389,316	3,345,462
May	272	582	854	538	316	319,731	437,237	2,937,842
June	316	585	901	559	342	282,051	473,818	4,958,387
July	342	432	774	500	274	140,827	351,021	3,023,108
August	274	406	680	411	269	134,667	230,859	2,218,582
September	269	321	590	347	243	84,032	154,140	1,424,819
October*	..	300	..	..	..	85,000	..	1,200,000
November*	..	250	..	..	..	75,000	..	1,000,000
December (Estimate)	..	200	..	..	..	70,000	..	800,000
Total for 1937		4,584				1,919,812		28,425,112

\*Strikes involving fewer than 6 workers or lasting less than 1 day are not included.

the Irish Free State, Uruguay, Union of South Africa, and British India; in 1934 for France, Latvia, Yugoslavia, Rumania, and Spain; in 1933 for Germany, Japan and Mexico; and in 1925 for Italy. The present study of labour disputes in 1937 will therefore be confined to the three countries first mentioned.

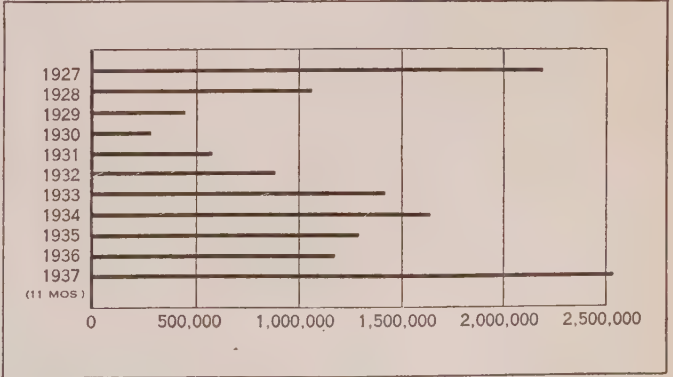
The United States was "the strike capital" of the world in 1937. Great Britain and Canada had more strikes than in 1936 but the number and severity were moderate compared with a number of earlier years. Labour disputes in France were a less prominent characteristic of the national life than in 1936. The political situation in Germany, Italy, Russia and Japan has made it "inadvisable" for wage earners to undertake strikes.

Table I shows for the United States the number of strikes, workers involved, and days lost, by months, 1936-37. The year 1937 exceeded in number of strikes every year since 1917. There were approximately a thousand more strikes than in 1919, the worst strike year between 1917 and 1937. The largest number of strikes between 1922 and 1933 was 1,553 in 1923. There were but 629 in 1928. Strikes began to increase in 1933 (see Table IV) and rose steadily to between 4,500 and 4,600 in 1937.

Though the number of strikes in 1937 exceeded the year 1919 the number of workers involved was far less. In the latter year 4,160,348 were out in 2,665 strikes for which such data is available; but in 1937 only 1,925,000 were out in approximately 4,500 strikes. The number of strikers was inflated in 1919 by the "great strikes" of the period—such as those in the coal mines, steel and textile mills, telephone industry of New England, the general strike at Seattle, the widespread struggles of clothing workers, longshoremen, the printing trades. In 1937, while there were definite points of concentration, such as the automobile and maritime industries, the year was characterized

by labour activity "on all fronts," including retail trade, hotels, restaurants and other service industries not affected by strikes in previous years, and a large part of the strikes involved relatively small numbers of people.

The industry most affected in 1937 was automobiles. Strike activity became significant in the automobile industry as early as 1934 and the tide of conflict reached its peak during the early spring of 1937 in the General Motors, Hudson and Chrysler strikes, all of which ended in union recognition and agreements. Forty-eight thousand automobile workers went out in the General Motors strike at the beginning of the year, tying up operations in 50 plants in 25 cities and stopping the employment of 126,000 workers. Throughout the year there were numerous "illegal" strikes by workers under these agreements, many of them short sit-down strikes, and in November strikes again broke



STRIKES AND LOCK-OUTS in the United States: monthly average of man-days idle



Table II—Causes of Labour Disputes in Great Britain, 1937, by Months

Cause	J	F	M	A	M	J	J	A	S	O	N
Demands for wage increases	19	16	14	35	26	23	21	37	38	36	30
Resistance to wage reductions	3	2	..	..	..	..	..	3	..	..	..
Other wage questions	18	17	13	24	31	20	12	34	20	23	25
Hours	4	3	..	6	2	4	2	8	3	2	2
Employment of particular classes of people or individuals	15	16	15	25	17	21	19	22	21	22	16
Other working arrangements	5	7	6	10	6	8	5	12	4	24	8
Questions in solving trade union principles	5	11	4	15	7	8	5	13	16	16	7
Sympathetic strikes	1	3	1	3	1	..	..	1	1	1	3
Demand for withdrawal of summons to individuals for breach of contract	..	..	..	..	..	..	..	4	..	2	..

Compiled from *The Ministry of Labour Gazette*, February-December, 1937.

out at General Motors and the Hudson Motor Company, chiefly over impatience and suspicion concerning the renewal of the agreement. During the latter part of the year, the United Automobile Workers staged several strikes at St. Louis and Kansas City against the Ford Motor Company, but up to the end of 1937 did not attempt a major strike against the Ford Company.

The Pacific coast maritime strike, which lasted 98 days and ended on Feb. 4, 1937, involved directly 37,000 workers, and many thousands indirectly. In contrast to the maritime strike of 1934 there was practically no violence. Each side appealed to public opinion by press and radio, and leaders of the opposing parties engaged in public debates before large audiences. The strike arose in difficulties connected with the revision and renewal of agreements which expired Sept. 30, 1936.

Other large strikes in 1937 occurred in the leading "independent" steel mills (Bethlehem, Inland, Republic, Youngstown Sheet and Tube), which started in May and gradually died out; a strike in the silk and rayon industry during the summer which resulted in agreements similar to those of the men's and women's clothing industries; several strikes in the rubber industry at Akron, Ohio; and the bitter strike in the properties of the Remington-Rand Company in New York, Ohio and Connecticut.

Sit-down strikes, while numerous, were not as important a part of the American strike picture in 1937 as they were in 1936. States began to enact legislation designed to prevent sit-down strikes. In Tennessee, for instance, employees are required to withdraw from the premises of the employer within 12 hours "of the date of such cessation of employment" (Tennessee Public Acts 1937, Chapter 160). Vermont passed a similar law. The U.S. Supreme Court refused to review a sit-down strike decision appealed by strikers of the Apex Hosiery Company, in the city of Philadelphia.

That is the nearest that the legality of sit-down strikes got to decision by the Supreme Court.

Many lower courts have held that sit-down strikes exceed the legal rights of strikers.

There were one day general strikes at Lansing, Mich., June 7, to protest against the arrest of pickets for alleged violation of an injunction, and at Niles and Warren, Ohio, on June 23, in protest against the passage of non-strikers into and out of the plants under protection of the National Guard.

Comparatively few strikes resulted from the bitter conflict between the American Federation of Labor and the Committee on Industrial Organization. Here and there, as among the warehouse

Table III—Results of Labour Disputes in Great Britain Settled in 1937

Results of Strikes	J	F	M	A	M	J	J	A	S	O	N
Settled in favour of labour	6	11	8	22	23	19	15	23	15	24	19
Settled in favour of employers	33	25	21	30	48	37	33	57	48	50	46
Settled by compromises	24	18	18	29	21	19	13	27	23	33	23
Negotiations pending, but work resumed	8	8	12	10	3	6	10	13	16	16	12

Compiled from *The Ministry of Labour Gazette*, February-December, 1937.



Upper: MOTION PICTURE SCENE of police charging C.I.O. strikers in the Memorial Day clash near a South Chicago steel mill

Centre: DEMONSTRATORS, routed by police, leave dead and wounded



Lower: ONE OF TEN FATALITIES of the battle in which more than 100 were injured, including twenty-three policemen



workers of San Francisco and the lumber and saw-mill strike in Oregon, the split in the ranks of labour resulted in strikes, but the activity of the National Labor Relations Board and State boards, such as the Wisconsin Labor Relations Board, in the adjustment of conflicts between the two labour groups prevented these conflicts (in most instances) from ending in strikes.

The monthly reports on strikes issued by the United States Bureau of Labor Statistics indicate that half or more of the strikes of 1937 involved some question of union recognition, with wages the other major issue. It was a year of offensive strikes—strikes to compel union recognition, for wage increases, for shorter hours, and other positive gains. But a small percentage of the strikes were definitely defensive, though many short strikes were occasioned by what workers believed to be employer infractions of agreements. On the whole, labour

fared well in efforts to improve its status. In June, for instance, 45% of the settlements resulted in substantial gains; and 32% more in compromises.

Labour disputes in Great Britain in 1936 and 1937 are shown for the first 11 months of each year in Table V. It will be observed that the number of strikes and number of workers involved was almost 50% greater in 1937, but was small compared with the situation in the United States, even when the difference in the sizes of the populations is considered. The most important areas of increased conflict were coal mining, engineering and shipbuilding, textiles, food manufactures, and the transportation industries, while the distributive trades and clothing manufacturers showed sharp decreases both in the number of strikers and man-days lost.

The 1,076 strikes, January-November 1937, may be compared with 1,607 in 1920, 323 in 1926, 471 in 1934 and 818 in 1936. It is



Table IV—*Strikes and their Causes, 1933-1937*  
(U.S. Bureau of Labor Statistics)

Year	Total Strikes	Causes of Strikes			Total Workers Involved in Strikes	Workers Involved in Strikes Due to:		
		Wages and Hours	Union Organization	Others		Wages and Hours	Union Organization	Others
1933 . . . . .	1,672	926	533	213	1,143,910	544,084	465,272	134,554
1934 . . . . .	1,817	717	835	205	1,480,343	340,174	762,307	371,802
1935 . . . . .	2,003	760	945	298	1,101,902	662,539	287,876	151,487
1936 . . . . .	2,156	756	1,083	317	709,748	250,672	305,019	94,057
1937* . . . . .	4,500	1,290	2,700	510	1,925,000	305,000	1,175,000	385,000
Total* . . . . .	12,148	4,449	6,096	1,603	6,360,903	2,168,469	3,055,534	1,136,900

\*Estimate, because of inclusion of November-December, 1937, figures which were not complete at the time this table was furnished.

Table V—*Labour Disputes in Great Britain, January to November, 1937, and January to November, 1936*

Industry Group	January to November, 1937			January to November, 1936		
	Number of Disputes Beginning in Period	Number of Work People Involved in All Disputes in Progress	Aggregate Duration in Working Days of All Disputes in Progress	Number of Disputes Beginning in Period	Number of Work People Involved in All Disputes in Progress	Aggregate Duration in Working Days of All Disputes in Progress
Fishing and agriculture . . . . .	6	1,700	19,000	5	2,200	12,000
Coal mining . . . . .	439	383,900	1,510,000	252	168,000	705,000
Other mining and quarrying . . . . .	13	1,100	7,000	20	4,100	117,000
Brick, pottery, glass, chemicals, etc. . . . .	37	2,500	10,000	29	2,400	15,000
Engineering and shipbuilding . . . . .	117	91,200	691,000	80	28,400	101,000
Other metal . . . . .	96	15,800	72,000	54	15,200	82,000
Textile . . . . .	81	23,100	155,000	70	12,100	92,000
Clothing . . . . .	32	9,900	71,000	26	12,200	155,000
Food, drink and tobacco . . . . .	16	1,900	6,000	8	4,200	12,000
Woodworking, furniture, etc. . . . .	57	2,800	30,000	39	5,700	98,000
Paper, printing, etc. . . . .	10	1,400	7,000	8	1,800	21,000
Building, etc. . . . .	87	7,100	37,000	70	7,400	43,000
Transport . . . . .	46	52,200	747,000	62	24,800	85,000
Commerce, distribution, finance . . . . .	11	800	7,000	9	8,800	69,000
Others . . . . .	28	3,500	25,000	27	3,600	27,000
Total . . . . .	1,076	598,900	3,406,000	759	300,900	1,634,000

The Ministry of Labour Gazette, December, 1937, p. 199.

evident that the number of strikes in 1937, when the 12 month figure is available, will be the highest since 1920.

Tables II and III show the causes of labour disputes and their results during the first 11 months of 1937. Two contrasts with the United States situation stand out—in Table II the absence of “union recognition” unless included in “questions involving trade union principles,” and in Table III the large percentage of the strikes which ended definitely in favour of the employers.

Canada reported 342 strikes during the first 11 months of 1937, involving 69,827 workers and the loss of 804,469 man-days. In 1936 there were but 156 strikes, with 34,812 strikers and 276,997 days lost; a rather typical strike record for Canada. But in 1921, '22, '24 and '25 over 1,000,000 days were lost each year on account of strikes and 1919 over 3,400,000 days in 336 strikes. The year 1937 ranks among the worst years so far as number of strikes is concerned, but, like the United States and Great Britain, it was a year in which there was a large number of small strikes, resulting in a moderate loss of working time. (See also CALIFORNIA: History; DETROIT; LABOUR; MICHIGAN: History; MUNICIPAL GOVERNMENT; SIT-DOWN STRIKES; UNITED STATES: Labour.) (D. D. L.)

**Submarine:** see LONDON NAVAL CONFERENCES; NAVIES OF THE WORLD.

**Submarine Pirates:** see MEDITERRANEAN, THE.

**Subscription Books Bulletin:** see AMERICAN LIBRARY ASSOCIATION.

**Sudan:** see ANGLO-EGYPTIAN SUDAN; FRENCH WEST AFRICA AND THE SAHARA.

Suez Canal.

Between Jan. 1 and Dec. 20, 1937, 6,431 ships of a total tonnage of 27,822,000 tons passed through the canal, as compared with 5,685 ships of a total ton-

nage of 21,531,000 in 1936. The total dues paid amounted to £10,492,300, or £452,800 less than during the corresponding period of the previous year. A factor in this decrease in total dues was the reduction made, as from April 1, 1937, in dues for laden vessels to 6s. per ton, for vessels in ballast to 3s. per ton, and for passengers to 6s. per head, children under 12 being taken at half price.

The arrangement made with the Compagnie Universelle du Canal Maritime de Suez in May 1936 by the then president of the Egyptian Council of Ministers, Aly Maher Pasha, was replaced on June 14, 1937, by a new agreement signed by Makram Ebeid Pasha, Minister of Finance. This provided for a royalty to be paid by the company to the Egyptian Government of £E.300,000 annually, payable in quarterly instalments, for the proportion of Egyptian-born subjects to be engaged by the company in the administration to be 33%

of the total strength of the purely administrative staff, and for the company to undertake to construct, at its own expense, up to a maximum cost of £E.300,000, the military road in the Isthmus of Suez prescribed under the Anglo-Egyptian treaty. In addition it was agreed that two seats on the board of directors, instead of the one so far provided, should be reserved for Egyptians, and that, if at any time the total number of directors was increased, one of the new seats should be held by an Egyptian. (See also CANALS AND INLAND WATERWAYS.) (A. Mn.)

Sugar.

World production and distribution of sugar in 1937 pivoted on the international agreement in London in May, when plans were formulated for international, co-operative regulation of production and distribution in 21 countries. The agreement became provisionally effective September 1, subject to acceptance by various countries, and was ratified by the U.S. Senate December 20. It allots quotas and is designed to run five years.

Total world production of sugar, raw values, for the 1937-38 crop year is estimated by the International Association for Sugar Statistics and F. O. Licht as 29,691,544 metric tons (28,895,829). All figures in parentheses herein are for the immediately preceding crop year, that of 1936-37. In this estimate cane sugar totalled 18,898,500 metric tons (18,694,048).

**Beet Sugar.**—For raw beet sugar the International Institute of Agriculture gave the 1937-38 world estimate as 12,136,889 short tons (11,136,889), of which 10,479,889 short tons were produced in Europe in 1937 (9,552,170 in 1936), and in the United States and Canada 1,529,000 short tons (1,482,268). The U.S. Department of Agriculture estimated the 1937 sugar-beet crop at 8,798,000 tons of beets (9,028,000), from which a raw sugar tonnage of 1,286,000 short tons was estimated. The 1936 production was 1,304,000 tons. International Institute of Agri-



culture estimates for beet sugar, raw, in different countries in 1937 and 1936 follow:

Russia, 2,800,000 short tons (2,203,000). Germany, 2,330,400 short tons (1,984,424). United States 1,468,000 short tons (1,396,000). France, 1,004,700 short tons (959,600). Czechoslovakia, 817,989 short tons (800,930). Poland, 610,000 short tons (505,382). United Kingdom, 526,000 short tons (649,534). Italy, 371,100 short tons (359,000). Sweden, 347,000 short tons (329,803). Belgium, 266,000 short tons (268,345). Denmark, 259,000 short tons (249,300). The Netherlands, 234,060 short tons (258,769). Spain, 226,000 short tons (249,000). Austria, 168,000 short tons (161,480). Hungary, 132,340 short tons (158,600). Irish Free State, 103,300 short tons (107,414). Rumania, 96,000 short tons (86,855). Canada, 61,000 short tons (86,268). Turkey, 70,000 short tons (72,626). Japan, 58,000 short tons (53,448). Latvia, 53,000 short tons (46,776). Yugoslavia, 50,500 short tons (110,073). Lithuania, 32,500 short tons (29,820). Bulgaria, 29,000 short tons (12,000). Switzerland, 13,000 short tons (10,000). Finland, 10,000 short tons (12,122).

**Cane Sugar.**—Estimates for cane-sugar production in different countries were given by the International Association for Sugar Statistics and F. O. Licht as follows:

British India, 2,100,000 metric tons gur (2,227,000) and 1,275,000 metric tons white sugar (1,362,000). Cuba, 3,146,000 metric tons (3,144,589). Java, 1,420,000 metric tons (1,414,000). Japan (Formosa), 1,278,000 metric tons (1,157,348). Philippine Islands, 1,010,000 metric tons (1,017,314). Brazil, 985,000 metric tons (915,914). Hawaii, 965,000 metric tons (929,640). Porto Rico, 875,000 metric tons (903,830). Australia, 752,000 metric tons (769,112). South Africa, 472,000 metric tons (440,412). British West Indies, 471,000 metric tons (455,372). Dominican Republic, 460,000 metric tons (451,936). Argentina, 410,000 metric tons (480,046). China and Indo-China, 457,000 metric tons (535,000). Peru, 365,000 metric tons (409,000). Mauritius, 315,000 metric tons (300,340). Mexico, 290,000 metric tons (332,000). British Guiana, 180,000 metric tons (180,000). Fiji Islands, 155,000 metric tons (153,924). Egypt, 150,000 metric tons (137,000). French West Indies, 92,000 metric tons (95,000). Central America, 89,000 metric tons. Haiti, 38,000 metric tons (36,583). Virgin Islands, 8,000 metric tons (3,411).

The Sugar Section of the U.S. Agricultural Adjustment Administration estimated sugar requirements of the United States for the calendar year of 1938 as 6,861,761 short tons, raw value and allotted the quotas from producing areas as follows: Continental United States, beet sugar, 1,591,390 short tons; cane sugar, 431,415 short tons. Cuba, 1,962,771 short tons. Philippine Islands, 1,057,416 short tons. Hawaii, 963,149 short tons. Porto Rico, 819,344 short tons. Virgin Islands, 9,155 short tons. The foregoing areas are either U.S. territory or enjoy preferential tariff rates. The remainder of 27,121 short tons of the United States 1938 quota was allotted as follows: Peru, 12,077,314lbs. Nicaragua, 11,106,817lbs. San Salvador, 8,919,943lbs. Mexico, 6,554,623lbs. Dominican Republic, 7,246,410lbs. Honduras, 3,730,055lbs. Haiti, 1,001,487lbs. Canada, 613,102lbs. United Kingdom, 381,058lbs. Guatemala, 363,927lbs. Belgium, 319,815lbs. China and Hongkong, 313,684lbs. Venezuela, 315,135lbs. Czechoslovakia 286,121lbs. The Netherlands, 236,747lbs. Dutch East Indies, 229,704lbs., and other countries in varying smaller quantities. (See also CUBA: *Agriculture and Mineral Production*.) (S. O. R.)

**Suicide Statistics.** About 15,000 persons commit suicide in the U.S. each year. The rate of such deaths places the U.S. about midway in the suicide scale between the record low of the Irish Free State, which averaged about

Suicides per 1,000,000 Inhabitants, 1920-36

Years	United States	England	Scotland	Northern Ireland	Irish Free State	France	Germany	Austria
1920 . .	102	91	49	27	20	175	213	218
1921 . .	125	99	56	47	25	196	206	204
1922 . .	118	102	56	45	22	..	219	235
1923 . .	115	103	67	40	25	..	214	278
1924 . .	121	96	74	54	32	..	231	309
1925 . .	121	105	76	60	30	193	245	321
1926 . .	128	114	87	50	33	192	262	341
1927 . .	133	125	103	64	32	193	253	327
1928 . .	136	124	97	51	33	189	252	370
1929 . .	140	126	97	57	38	184	261	363
1930 . .	157	127	101	49	28	190	278	388
1931 . .	168	129	102	50	37	190	283	412
1932 . .	174	143	102	56	37	206	292	441
1933 . .	159	140	106	55	35	200	287	423
1934 . .	149	137	106	52	35	..	287	391
1935 . .	143	129	94	40	31	..	275	..
1936 . .	..	124	100	39	..	..	..	..

30 suicides annually to 1,000,000 inhabitants during the last 15 years, and Austria, with the highest rate which reached 441 per 1,000,000 inhabitants in 1932. Suicides increased in most countries preceding the World War, and decreased during the war. They rose again in subsequent periods of business stringency.

(R. R. K.)

**Sulphanilamide:** see DRUGS AND DRUG TRAFFIC; EPIDEMICS; MEDICINE: *Sulphanilamide*; PNEUMONIA; SURGERY.

**Sulphanilamide, Elixir of:** see AMERICAN MEDICAL ASSOCIATION; DRUGS AND DRUG TRAFFIC; MEDICINE: *Sulphanilamide*.

**Sulphur.** The United States is the outstanding sulphur producer of the world, with about three-quarters of the entire output; Italy is a poor second, with one-sixth, and Japan third with one-fifteenth; all other producers are so small as to be negligible so far as the world industry is concerned, although the production may serve to satisfy local needs. World production reached almost 3,000,000 metric tons in 1929, dropped to 1,625,000 tons in 1932, and recovered to about 2,500,000 tons in 1936. Italian production has remained with little change during recent years, while Japan has been consistently increasing.

The United States output dropped by more than half during the depression years, and has now recovered to better than 2,000,000 tons, which is still 23% below the 1929 high.

Technologically, some progress has been made in the recovery of elemental sulphur in the roasting of sulphur-bearing ores. While some of the sulphur dioxide thus made has for many years been used for the production of sulphuric acid, a large proportion has been wasted, creating at the same time an economic waste of considerable magnitude, and a nuisance that involves expense for its abatement. Active work along this line is being done in England, Norway, Sweden, and Finland.

(G. A. Ro.)

**Sumatra,** which lies north-west of Java and which, along its north-western coast, is closely adjacent to the Malay peninsula, is after Java the most important and after Borneo the largest of the Sunda islands. Its area is 163,145 sq.mi.; population (1930) 8,238,570. It is almost bisected by the Equator, lying between 5° 4' North and 5° 59' South. It contains a long mountain range called the Bukit Barisan ("array of mountains"), of which Mount Indrapura has an elevation of 13,700ft. and Mount Ophir of 10,483 feet. The range faces the Indian ocean and descends toward the East into a broad plain, which is covered by immense forests and moors. There is a long line of volcanic peaks, of which the most famous is Krakatoa, in Sunda strait. Sumatra is



less advanced and less economically developed than Java, but enjoys the same rights of representation in the Volksraad. The island possesses both agricultural and mineral resources. Native agricultural production is mainly devoted to rice cultivation, although Sumatra is not self-sufficient in rice and depends to some extent on imports from abroad. Rubber and coffee are the main products of the European plantations. Government coal mines in Sumatra yielded an output of about 830,000 tons in 1928. The output of crude oil in the same year was about 880,000 tons. Limited amounts of gold and silver are also mined. (W. H. CH.)

**Sunday Schools.** The world's Sunday school convention at Oslo, 1936, reported 369,510 Sunday schools in 129 countries, with 3,145,895 teachers and 34,139,624 scholars. This represents an increase in four years of 2.75%, considerably less than in previous quadrennia. Africa and South America showed large increases; Europe a small decrease. In September, 1937, it was reported that the Methodist Episcopal Church had suffered a decrease since 1925 of 6,764 Sunday schools and 902,529 teachers and scholars. Decline in adult classes, growth of other forms of organization for the religious education of youth, competition of varied interests and allurements in a materialistic age, and falling birth rate, are reasons cited. In Japan a decrease is reported due to the growth of militarism and the requirement of worship at national shrines. Dissent from the latter policy brought punishment upon some Sunday-school leaders and Christian educators in Korea. Sunday schools are forbidden by law in Russia; and in Turkey they may be conducted as "children's worship services" only.

In Great Britain advances were made in the grading of Sunday schools and in closer co-operation between Sunday schools and elementary day schools. In India native leaders were placed in charge of teacher-training and of a new religious education department of the National Christian Council. The first general Sunday school convention for the Bantu people was held in South Africa. Sunday school work made progress, with the approval and co-operation of ecclesiastical authorities, in the Armenian Church, the Coptic Church, and the Greek Orthodox Church. A nation-wide movement in China for the training of voluntary lay church workers, initiated by the National Committee for Christian Religious Education, got well under way before the invasion of China by Japan.

In spite of its world-wide spread and its adoption by other than Christian faiths, notably the Buddhists of Japan, the Sunday-school movement is still strongest among English-speaking peoples. (L. A. WE.)

**Sunshine:** *see* METEOROLOGY.

## **Supreme Court of the United States.**

In a special message to Congress on February 5, President Roosevelt started a political controversy, which for unrelenting bitterness dwarfed all others of the year in the United States. An earlier hint of his intention to try legislative means for coping with the troublesome problem of judicial veto had stimulated members of the two houses to present various partial remedies. But in the February message Mr. Roosevelt called for a root and branch reform and a general revitalizing of the courts. He submitted the draft of a bill which provided:

(1) For the voluntary retirement of Supreme Court justices at the age of 70 on full pay and the appointment of an additional justice for every eligible justice who failed to take advantage of his privilege to retire, saving that the total membership of the court should never exceed 15.

(2) For the appointment on similar grounds of additional circuit and district judges.

(3) For direct appeals from district courts to the Supreme Court on all constitutional issues.

(4) For the restraint of lower courts from issuing any injunction against the enforcement of a federal law without sufficient notice to the Department of Justice so that a competent defence could be prepared.

These points were not new or inherently objectionable. The procedural reforms had often been urged by members of the legal profession. And the desirability of creating inducements for aged judges to leave the bench was generally recognized. Even the conservative Justice McReynolds, had, as attorney general in 1913, recommended the enactment of a law substantially embodying the second point above enumerated. And Mr. Hughes had in 1928 spoken deprecatingly of superannuated judges who "seem to be tenacious of the appearance of adequacy"—a sentence aptly quoted by Mr. Roosevelt in his message.

The objection was not to the proposed changes in themselves, but to their obviously intended use as a means of altering the political composition of the Supreme Court. The sudden addition of six new justices within a year after the Court had rendered eleven decisions against the Administration's basic program, appeared to the eyes of conservatives as an assault upon the independence of the judiciary. And many professed liberals expressed alarm lest the precedent be used against them in the future.

The attitude of Republicans as a party was expressed in the instant denunciation of the bill by Herbert Hoover, Alfred Landon, and John Hamilton. The Democrats were divided. The press stood predominantly with the opposition. A test poll showed that only a minority of the Senate heartily favoured the measure but that party discipline would probably suffice to secure its passage. Public hearings before the Senate Judiciary Committee began on March 10 and lasted through April 23. Moderate leaders in Congress pressed for an early passage of the pending Sumners-McCarran bill, which provided merely for voluntary retirement of Supreme Court justices over 70 years of age. It was their hope that this would tempt one or more conservative members of the tribunal to step down and thereby remove the urgency for a more drastic act. This measure did quickly pass both houses and was signed by the President on March 1. At the same time a visible shift in the Court's position toward progressive legislation—notably in its decisions upholding the Washington minimum wage law (March 29) and the Wagner Labor Relations Act (April 13)—strengthened the opposition. So also did the letter addressed by Chief Justice Hughes to Senator Wheeler denying that the Court was behind its calendar and stating that additional members would rather lessen than increase its efficiency.

It was clear by the end of April that the Senate committee would report against the bill, although its actual vote to do so was not taken until May 18, the same day on which Associate Justice Van Devanter announced his intention to retire. Whether the timing of these two events was pure coincidence or not, its effect was further to weaken support of the bill. On July 2 a substitute measure known as the Hatch amendment was introduced on the Senate floor with the sanction of majority leader Robinson. This at first seemed likely to command a majority vote. But as the debate dragged on, support for it dwindled.

Robinson's sudden death on July 14 removed the last vestige of hope for its adoption. Further concessions from the Administration proved unavailing. Finally on July 22, through the good offices of Vice-President Garner, an agreement was reached which resulted a few weeks later in the enactment of a law





THE SUPREME COURT of the United States, as constituted in 1937 after Justice Black (fourth from left, standing) succeeded Justice Van Devanter, resigned. Sitting, from left to right: Associate Justices George Sutherland; James C. McReynolds; Chief Justice Charles E. Hughes; Associate Justices Louis D. Brandeis; Pierce Butler; Standing, from left to right: Associate Justices Benjamin N. Cardozo; Harlan F. Stone; Owen J. Roberts; Hugo L. Black

providing for certain reforms in the lower courts without reference to the Supreme Court.

This ended for 1937 the main phase of the judiciary struggle. There followed immediately a new controversy over the question, who should fill the place vacated by Mr. Van Devanter. A strong movement in the Senate favouring Mr. Robinson had been defeated by his death; and no new preference by that body had crystallized before August 13 when the President submitted the name of the aggressive New Deal Senator, Hugo L. Black. In the debate which ensued opposing senators emphasized particularly what they deemed to be constitutional objections. But Senator Copeland dwelt more insistently upon the charge that Mr. Black owed his seat in the Senate to the Ku Klux Klan. In spite of this the nomination was approved August 17 by a vote of 63 to 16.

Public discussion of the subject was re-opened in September through the syndicated publication of a series of news articles which purported to prove that the new associate justice had been and was still a Klansman. Mr. Black refused all comment until his return from a vacation abroad. Then, speaking over a nationwide radio hookup, he declared that he had joined the Klan 15 years ago, had later resigned, and had never rejoined. The statement virtually closed the issue though some flickering interest in it was revived during the early weeks of October when a futile effort was made to have the appointment set aside by the Court itself. (See also AMERICAN BAR ASSOCIATION; LABOUR UNIONS; *Supreme Court Decisions*; CONGRESS, UNITED STATES.)

(G. P. BA.)

**Surgery.** The outstanding contribution to orthopaedic surgery in late years has been the revival, on a sound basis, of internal fixation for recent fractures of the neck of the femur or thigh bone by means of a triple flanged nail, or by pins, or by lag-screws. These methods make wearing of a cast unnecessary and permit early movement of the leg. Not only is union of the broken bone obtained in a high percentage of cases but the stiff hip and stiff knee are largely prevented.

In plastic surgery, better understanding of the instances requiring use of the pedicle skin graft, of the free dissected graft and of the shaved graft has improved the cosmetic results of plastic operations about the face. Advanced methods of transplanting flaps of mucous membrane from the nose to replace the absent mucous membrane in cases of cleft palate have improved functional and cosmetic results. The inlying split skin graft taken from the thigh also has been more extensively applied than before in treatment of certain congenital abnormalities of the genito-urinary tract; for instance, in the correction of failure of the male sex organ to develop properly. The same type of split skin graft, covering a rubber tube, has been used successfully in the formation of the female sex organ when this structure has failed to develop. The risk of such a procedure is infinitely less

than that of other methods of forming artificial organs.

Removal of obstructing portions of the prostate gland by procedures carried out through the natural openings with a mortality of less than 1%, has practically superseded the open methods of removal in which the risk was considerably greater. Control of infection in connection with operative or diagnostic procedures

relative to the urinary tract has been importantly improved by demonstration of the value of increased acidification, effected with ammonium chloride and mandelic acid. This, and the more recent use of sulphanilamide, have proved efficient in controlling most of the urinary infections even in otherwise intractable cases. Sulphanilamide must be used cautiously and under the daily supervision of a physician. Conservative surgical procedures directed toward relief of urinary obstruction in the kidney have assisted in the preservation of many hydronephrotic kidneys, as well as in the removal of multiple obstructing renal calculi. In this respect, the use of roentgenoscopic and roentgenographic examinations of the kidney in the operating room, both prior to and subsequent to removal of stones, has been of great assistance in removal of all of the stone fragments.

In surgery of the nervous system physiological knowledge has been applied in treatment of essential hypertension, or high blood pressure which develops without demonstrable cause. Apparently this condition is attributable to vasomotor spasm of the arterial system, caused by abnormal stimuli from the brain and spinal cord reaching the arteries and arterioles through the sympathetic nervous system. Numerous operations have been devised to interrupt these stimuli in order to prevent a large vascular area from receiving excessive vasomotor stimuli as well as to make available a reservoir in these same arteries when the nondenervated arteries and arterioles go into spasm. Adson advocates bilateral resection of the splanchnic nerves, with removal of the upper two lumbar ganglions on each side, effected through a subdiaphragmatic, extraperitoneal approach, in order to denervate the arterial system below the diaphragm. Another advance in this field has been in treatment of intractable sciatica. The cause of this condition frequently had been overlooked until injection of a radiopaque oil into the spinal canal was employed to reveal filling defects opposite the intervertebral foramina. Roentgenographic observations, after the injection, allow localization of protruded portions of a ruptured intervertebral disk. Lumbar or sacral nerve roots are irritated or compressed by these tumour-like masses. Removal of them is effected by excision after laminectomy.

Thoracic surgery, although a relatively new field, has made great progress in recent years owing to better understanding of many physiological problems necessary to function of the vital organs contained within the thorax and to the development of surgical methods that will insure sufficient function of these organs to maintain life during operative procedures on them. It is now relatively common to remove one or more lobes of a lung for certain inflammatory or malignant conditions. It is also possible to remove some tumours and cysts from the lung and adjacent structures, with complete relief of symptoms. Operative procedures have been developed which make possible rectification of certain conditions of the heart as well as those of its pericardial covering; many patients who otherwise would have died are being



restored to health. In cases of herniation of abdominal viscera into the thorax, a condition often called "up-side-down stomach," the herniated viscera are replaced and the abnormal opening in the diaphragm is repaired. This operation is now done relatively often. Marked advance has been made in surgical treatment of pulmonary tuberculosis and surgery is now one of the greatest aids in fighting this dreaded disease.

Various physical principles have been applied in designing operating room equipment. Operating rooms are conditioned with filtered air which is subjected to ultra-violet radiation both before and after entering the operating room. The latter has been accomplished by means of lighting apparatus. When this apparatus is used the operating personnel must wear special goggles, masks, gowns, and so forth.

Further improvement in the field of anaesthesia, including intraspinal injection of solutions of procaine has continued to gain in favour both among surgeons and patients. The risk of this method of anaesthesia has been progressively lessened by better understanding of it and by control of decreases in blood pressure by intravenous injections of ephedrine. Introduction of anaesthetic substances which can be injected intravenously has been of great value in short operations wherein abdominal relaxation is not required.

(WA. WAL.)

**Surinam** (Dutch Guiana), a Dutch colony in North-eastern South America; area, 54,291 sq.mi.; language, Dutch; capital, Paramaribo (pop. 52,705); governor, Dr. J. C. Kielstra. Surinam has a population of 148,971 (census of Jan. 1, 1937), excluding an estimated 17,000 Negroes and 3,500 Indians in the jungle. The colony is governed by an appointed governor and partially elected council. The new constitution, in effect July 8, 1937, somewhat broadened the electorate. Surinam has one railroad (length, 137kms.) and fairly good roads in the coast district. External communication is by steamship lines and a bi-weekly air service. Almost half of the foreign trade is with the Netherlands; the United States is second. The chief imports are manufactured goods and foodstuffs; the chief exports are coffee, sugar, molasses, miscellaneous agricultural products, and gold. Gold production in 1936 totalled 443,487 grams. The monetary unit is the Dutch florin (value: approx. 56¢ U.S.). Government expenditure in 1936 was 6,688,875 florins and the revenue but 3,904,577 florins, necessitating a Netherlands government subsidy. In 1936 Surinam had 132 schools (43 government), with 22,130 enrolment, besides 33 Indian and Negro schools in the jungle.

**Swaziland**, A British protectorate in South Africa, bounded N. W. and S. by the Transvaal, and E. by Portuguese East Africa and Zululand. It is administered by a resident commissioner, Mr. Chas. Lamb Bruton, O.B.E., under the high commissioner for South Africa, but during 1937 steps were taken with the object of transferring the protectorate to the Union (*see* SOUTH AFRICA, THE UNION OF). The paramount chief of the Swazis is Sobnuza II, but concessions to Europeans have left barely one-third of the territory to the natives. The administrative headquarters are at Mbabane. Area 6,704 sq.mi.; pop. (1936), Bantu 153,270, European 2,740. There are government and missionary elementary schools. The chief supports the Swazi National school. A motor service on the main routes is run by South African Railways, and one from Goba railhead to Stegi by Portuguese Railways. There are no railways. Maize, tobacco, and citrus are produced, tobacco production in 1936 being 261,794 pounds. Export and import statistics are not available, since Swaziland is, for this purpose, treated as a province of the Union of South Africa; its share of revenue from

customs in 1935-36 was £19,822. A poll-tax of £1.15.0 is paid by all native males, and £1.10.0 for each wife after the first, up to a maximum of £4.10.0. 2s from each unit of tax is credited to the Swazi National Fund for education and social services. Currency is as for the Union of South Africa. Total revenue and expenditure for 1935-36 were £158,479 and £135,255 respectively.

**Sweden**, kingdom of northern Europe, member of the League of Nations. Bounded N. by Norway, E. by Finland and Baltic waters, S. by the Baltic sea, W. by Baltic waters and Norway. Capital, Stockholm. Ruler, King Gustaf V (born, 1858; succeeded, 1907), National flag, a yellow St. George's cross on a blue ground.

**Area, Population, and Cities.**—Area: including lakes (3,505) 173,347 sq.mi.; population: (1930 census) 6,142,191; (1935 estimate) 6,249,489:

Government	Area (sq.mi.)	Population (1935)
Älvsborg . . . . .	4,919	321,433
Blekinge . . . . .	1,173	146,315
Gävleborg . . . . .	7,609	281,096
Göteborg and Bohus. . .	1,948	469,908
Gotland . . . . .	1,220	58,049
Halland . . . . .	1,901	152,863
Jämtland . . . . .	19,967	136,540
Jönköping . . . . .	4,449	236,023
Kalmar . . . . .	4,456	231,918
Kopparberg . . . . .	11,649	248,930
Kristianstad . . . . .	2,488	248,587
Kronoberg . . . . .	3,826	154,549
Malmöhus . . . . .	1,871	518,934
Norrbottn . . . . .	40,742	207,553
Örebro . . . . .	3,561	218,945
Östergötland . . . . .	4,266	312,329
Skaraborg . . . . .	3,269	240,777
Södermanland . . . . .	2,630	188,882
Stockholm (City) . . . .	55	533,884
Stockholm (Dist.) . . . .	2,986	271,110
Upsala . . . . .	2,059	139,137
Värmland . . . . .	7,427	273,282
Västerbotten . . . . .	22,838	214,914
Västernorrland . . . . .	9,924	282,022
Västmanland . . . . .	2,609	162,009

Swedes are prevalently of pure Scandinavian stock; practically all belong to the State-recognized Lutheran Protestant Church.

Elementary education is compulsory and free. Elementary pupils (1934): 642,436; in secondary and high schools (1935): 53,000; in Upsala and Lund universities (1936): 6,200. Principal towns (1936): Stockholm (533,884), Göteborg (busiest port; 258,387), Malmö (141,485); two others had over 50,000, and 12 more over 25,000.

**History.**—The king wields executive power, under advice from a council of State (premier and ten ministers), and, on legislation, a diet (first chamber, 150, elected for eight years; second chamber, 230, elected for four years by universal suffrage and proportional representation), Social-Democrats hold majorities. The (1936) ministry is Socialist-Agrarian; premier, Hr. P. A. Hansson. The year was regarded as prosperous. Prince Carl, nephew of the king, renounced his rights on marriage (Stockholm, July) to Countess Elsa von Rosen.

**Trade, Communications, and Finance.**—The percentage (below 50) of the population living by agriculture (hay, oats, potatoes, beets) is decreasing. The forests are valuable. Mining remains the chief industry; iron ore is mainly exported. Timber and timber-products (including paper and pulp) and machinery are leading exports. Exports—1,505 million kronor (£75,000,000)—and imports—1,619 million kronor (£81,000,000)—for 1936 showed increases, maintained in half-1937.

Of about 10,500 miles of railway, rather less than half are



State-owned (and, of that, 35% electrified). Telegraphs and telephones are well developed. Commercial aviation (616,000 miles; 22,960 passengers—1935) is subsidized. Mercantile marine (1936): 1,259 ships (1,514,917 tons).

The unit of currency is the (nickel) krona (at par, 18.16 kronor = £1 = \$4.87). Budget estimates (1937-38): 1,291,486,000 kronor. The National Bank, guaranteed by the diet, returned a balance-sheet (Dec. 1936) of 1,578,088,777 kronor, notes in circulation representing little over half. Savings banks (post office and other) had nearly 4,500 million kronor on deposit in 7,218,091 accounts.

**Defence Forces.**—The army (conscript and volunteer) had (1936) 1,688 officers and 21,813 other ranks (potential total, 575,000); the air force, 850 all ranks (93 machines); the navy, 310 officers, 3,800 other ranks (seven coast defence ships, two cruisers). Defence expenditure: 126 million kronor. The July reorganization authorized substantial additions to the navy. (See also WATER POWER.)

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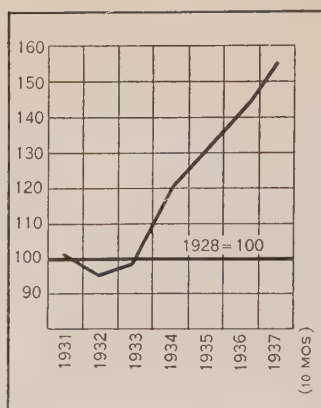
**Swedish Literature:** see SCANDINAVIAN LITERATURE.

**Sweepstakes:** see HORSE RACING.

**Sweet Potatoes.** The 1937 crop of sweet potatoes in the United States was estimated by the Department of Agriculture as 75,393,000bu., compared with 64,144,000 in 1936 and the five-year (1928-32) average of 66,368,000 bushels. Adequate rainfall over most of the producing area and favourable conditions at harvest time resulted in a yield of 89.4bu. to the acre as against 78bu. in 1936 and a five-year average of 88.5 bu. to the acre.

The acreage harvested was 843,000ac. in 1937 and 822,000 in 1936; for the five-year (1928-32) average, 771,000 acres. In Georgia there was an increased acreage of 12% and a crop of about 7,875,000bu. compared to 6,630,000bu. in 1936. In Louisiana acreage was decreased about 20%, and production was approximately 8,800,000bu. as against a crop of 7,797,000bu. in 1936. North Carolina production approximated 8,100,000bu. in 1937, compared with 7,560,000bu. the previous year. The Alabama acreage for 1937 was 20% larger than in 1936 and production about 7,200,000bu., compared to 6,160,000bu. in 1936. New Jersey production was estimated at 2,320,000bu. in 1937, and 2,400,000 in 1936. In Tennessee the 1937 acreage was 15% over 1936. (See also CHEMISTRY, APPLIED.) (S. O. R.)

**Swift, Sir Rigby Philip Watson** (1874-1937); British justice; born at St. Helens, Lancashire. He was educated at Liverpool and London university, and was called to the bar in 1895, joining the Northern circuit. He became a K.C. in 1912, was recorder of Wigan from 1915 to 1920, and was made a bencher of Lincoln's Inn in 1916. From 1910 to 1918 he represented St. Helens in Parliament as a Conservative. In 1920 he was knighted and was appointed judge of the King's Bench division, in which he reached the position of senior judge. Mr. Swift was an outspoken critic of the



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English divorce and betting laws. He died at Crowborough, Sussex, Oct. 19, 1937.

**Swimming** made notable strides in 1937. Increasing recognition of its value in life-saving and physical culture was manifest the world over. Everywhere there was a greater tendency toward making natatorial courses an integral part of the curricula at schools and universities. Germany decreed that all her boys and girls must learn to swim before the age of nineteen.

As a competitive sport, swimming progressed apace; the number of contestants grew; average skill improved materially; in most countries many national records were broken; quite a few world's records also fell. Foremost internationally were the exploits of Miss Ragnhild Hveger, of Denmark, and Ralph Flanagan, of the United States. Miss Hveger, a 17-year-old marvel, shattered nearly a dozen world's standards, some several times. Her greatest feats were to slash the marks for 440-yards free style from 5min. 22sec. to 5min 12.8sec. and 400-metres back stroke from 5min. 59.8sec. to 5min. 44.5 seconds. Flanagan swam his best in cutting the world's record for one mile from 20min. 57sec. to 20min. 42.6 seconds. On the way he passed 1,650 yards in 19min. 18.2sec., outdoing Hiroshi Takahashi, of Japan, who set 19min. 37.8 sec. as the year's fastest time for 1,500 metres (1,640.4 yards), the Olympic route.

Noteworthy results marked America's 100-metre free style championship for women. The times of the four leaders, the Misses Elizabeth Ryan, Toni Redfern, Claudia Eckert and Mrs. Olive Mucha, totalled 4min. 35 seconds. Dutch girls won the last Olympic 400-metre relay in 4min. 36 seconds. Five American champions competed in Japan. Three defeated Nippon's topnotchers, Adolph Kiefer at the back stroke, Elbert Root in diving and Miss Katherine Rawls in crawl and dorsal tests. Jack Medica and John Higgins were defeated in free style and breast stroke events. Hungary won the water polo Horthy Cup, emblematic of European supremacy, and reaped high honours also at the international university swimming championships in Paris.

(L. DE B. H.)

**Swing Music:** see DANCING; JAZZ; SONGS, POPULAR.

**Switzerland**, a confederation of west-central Europe, member of the League of Nations, bounded N. by Germany, E. by Austria, S. by Italy, and W. by France. Capital, Bern (fourth city in population). President (1937), Dr. Giuseppe Motta. National flag, a small white Maltese cross on a red ground.

**Area, Population, and Cities.**—Area: 15,944 sq.mi.; population (1930 census): 4,066,400:

*Canton	Area (sq. mi.)	Population (1930)	*Canton	Area (sq. mi.)	Population (1930)
Aargau	542	259,644	Nidwalden	106	15,055
Appenzell (Ext.)	94	48,977	Obwalden	190	19,401
Appenzell (Int.)	67	13,988	St. Gallen	777	280,362
Basel	105	92,541	Schaffhausen	115	51,187
Basel (City)	14	155,030	Schwyz	351	62,337
Bern	2,658	688,774	Solothurn	305	144,198
Fribourg	645	143,230	Thurgau	388	136,063
Genève	109	171,366	Ticino	1,086	159,223
Glarus	264	35,653	Uri	415	22,968
Graubünden	2,740	126,340	Valais	2,021	136,394
Luzern	576	189,391	Vaud	1,239	331,853
Neuchâtel	309	124,324	Zug	93	34,395
			Zürich	668	617,706

\*The name of each canton is given in the language predominant in it.

Protestants were returned as 57% of the population, Roman Catholics as 41. Almost three-fourths spoke German, one-fifth French, one-sixteenth Italian.

Elementary education is obligatory and free. Statistics (1934-35): 4,333 primary schools with 473,040 pupils; 713 secondary





ELIZABETH RYAN, U.S. woman champion, 100-metre, free-style swimmer

schools with 77,257; (1935-36) seven universities with 8,738. Zürich is the largest town (1933: 312,600); Basel, Geneva, and Bern exceeded 100,000; three others, 50,000 (1930).

**History.**—Each canton is autonomous, the Federal government ruling only in war and treaties, and supervising the national services. Election results, Oct. 27, 1935: National Council (elected by adult suffrage and proportional representation for four years), Social Democrats 50, Radicals 48, Catholics 42, Agrarians 21, other parties 26. Council of States, Radicals 15, Catholic Conservatives 18, other parties 8. The seven members of a Federal council act as ministers.

Switzerland's role of hostess for international conferences (apart from the League of Nations, since 1936 in the new Palais des Nations, Geneva) was sustained by the meeting of Powers at Nyon, occasioned by the Mediterranean situation arising from the war in Spain. In June Geneva was discovered to be in use as a centre for smuggling arms via France to Spain. In November the principle of popular initiative (see *Encyclopædia Britannica*, vol. 21, 677-78) was invoked for a proposal to amend the constitution so as to re-establish the complete neutrality, economic as well as military, existing prior to 1914. It was foreseen that this would raise the issue of sanctions, and so of membership of the League of Nations. In April the Communist Party was banned in Neuchâtel canton—the first suppression in history of a political creed by vote; in June, Geneva canton followed suit. In July, Romansch, a Latin derivative, spoken by some 50,000 in eastern cantons, was declared an official language (the fourth). In March exceptionally heavy weather gave rise to disastrous avalanches and some perilous rescues therefrom.

**Trade, Communications, and Finance.**—Almost half the area is unproductive or forest land (reafforestation is active); most of the remainder is under grass and pasturage (cheese and condensed milk are leading industries); agriculture engages over one-fifth of the population. Pisciculture is pursued; 18 cantons produce wine. Clocks are an outstanding manufacture (nearly 17 million in 1935; an increase of 2½ million on 1934). Imports (1936): 1,266,262,000 fcs. (£58,680,000)—a slight fall; exports: 881,633,000 fcs. (£40,816,000)—a slight rise. Britain took one-seventh (watches and silk goods leading). Half-1937 figures showed substantial increases.

Of the State railways (3,218 miles) 1,313 miles had been electrified in 1935. Road mileage: 10,200. Air transport is developing: 1,055,635 kilometres; 21,485 passengers; 173,424 kilos mails and goods (1936). Posts, telegraphs, and telephones (including radio) are highly developed.

Unit of currency: (silver) franc (at par 25.22 fcs. = £1 = \$4.87). Budget expenditure (1936): 540,497,667 fcs. The National Bank has the right of note-issue; in circulation (March 6, 1937): 1,355,431,000 fcs. Total public debt (including railways): 5,448,015,000 fcs.

**Defence Forces.**—Service in the militia is compulsory: under

training, 46,200—period, 88 days; aeroplanes, 160; military expenditure (1936), 98,500,000 fcs. (See also WATER POWER; ROMANSCH.)

**BIBLIOGRAPHY.**—E. Gagliardi, *Geschichte der Schweiz* (3 vols.; Zürich, 1933); M. Reymond, *Histoire de la Suisse* (3 vols.; Lausanne, 1933). (H. Fw.)

**Sydney.** Capital city of the State of New South Wales (*q.v.*) Australia; situated on a natural harbour (Port Jackson) extending 20mi. inland and having a water frontage of 188mi., at the mouth of the Parramatta river; the largest city and port of Australia; distance from London, 11,630mi. Pop. (Dec. 1936), including suburbs, 1,267,350, comprising 47.3% of the population of New South Wales; area, 154,688 acres. Shipping (1935-36): tonnage entered, 10,479,774 tons net; cargo discharged, 1,319,633 tons (478,974 tons interstate); cargo shipped 1,356,386 tons (190,649 tons interstate). The volume of shipping entering the port in 1936-37 constituted a record, as did the tonnage of goods handled.

Sydney enjoyed a real-estate and building boom in 1937. Sales of real estate in the city and suburbs in the nine months to September were 519% above depression level (1931); in some areas inquiries for suburban properties exceeded the number recorded in the boom years 1927 and 1928. Trolley buses were inaugurated, and big extensions made to suburban bus-services (State-owned). Progress was made with the City Railway, running underground from Circular Quay. The accounts of the Sydney Harbour bridge showed a surplus for the first time in 1936-37, income being £477,858 (including £402,702 from tolls), and expenditure £415,810 (including £334,432 for interest). For 1937, a surplus of £3,451 was estimated, although the levy on local councils was abolished.

Preparations were made for the celebration in Sydney in 1938 of the 150th anniversary of the founding of Australia.

(H. V. H.)

**Symphony Orchestras:** see MUSIC.

**Synthetic Products:** see CHEMISTRY, APPLIED; INDUSTRIAL RESEARCH; PAINTS AND VARNISHES; PLASTICS INDUSTRY; RAYON; RUBBER AND RUBBER MANUFACTURE; TEXTILE INDUSTRY; WOOL, etc.

**Syphilis:** see VENEREAL DISEASES.

**Syria and Lebanon.** These levantine republics are administered under a French mandate, pending their acquisition of independence. The president of Syria is Hashem Bek el Atassy, elected Dec. 1936, and that of the Lebanon Emile Eddeh, elected Jan. 1936. Total area, *c.* 57,900 sq.mi.; total population (1935), 3,630,000. Syria is predominantly Mohammedan, and Lebanon Christian. Capitals: are Damascus (Syria) and Beirut (Lebanon). (X.)

The year 1937 was dominated by the expectation of a change of régime. On Sept. 9 and Nov. 13, 1936, respectively, treaties



of friendship and alliance had been signed in Paris between France and Syria, and between France and the Lebanon. The texts of these treaties have been ratified by Syria and Lebanon respectively; they await the ratification of France.

The Syrian and the Lebanese treaties present totally different characters. The Syrian treaty brings into effect a liquidation demanded and obtained by a nationalist Pan-Arab Government. The result of the Lebanese treaty, on the other hand, would be to consolidate French protection, replace the mandate by a contractual régime which is not unlike that of the protectorates. While the Muslims of Syria were anxious to free themselves from French tutelage, the Christians of the Lebanon, anxious for their independence and for their very lives, wanted to keep the protection of France. For, in those regions, the States are purely artificial constructions, and do not correspond to any human reality. The only reality is religious faith. The State of Syria considers itself too small, and wishes to join a confederation of all the Muslim countries of the Near East. The Christian State of Lebanon, on the other hand, considers itself too big, and would willingly abandon to Syria the southern and eastern districts whose population is chiefly Muslim.

In Aug. 1937 Christians were massacred at Amouda, in Upper Jezireh, on the borders of Turkey and Iraq. The aggressors were Kurds, said to have been encouraged and financed by the Arab Government in Damascus. (R. PIN.)

**Szymanowski, Karol** (1883-1937), Polish composer, considered the greatest since Chopin. Since 1922 he had been professor of composition and director of the State conservatory at Warsaw. The most famous of his later works was the ballet "Harnasie" based on Polish folk songs and dances, which was received with overwhelming success in Paris a few months prior to his death and was performed in New York city but two days after he had died. Within recent years he had also written the masques *Scheherezade*, *Tantris the Fool* and *Don Juan's Serenade*, the chorale *Stabat Mater*, and the opera *King Roger*. He died near Lausanne, Switzerland, March 29, 1937.

**Table Tennis:** see PING-PONG.

**Tahiti:** see PACIFIC ISLANDS, FRENCH.

**Taiwan:** see FORMOSA.

**Tajik S.S.R.,** a member of the U.S.S.R. (*q.v.*). This Central Asiatic Soviet Republic, the nearest to India, borders on the republics of Uzbekistan and Kirghizistan, on China and Afghanistan. The capital is Stalinabad (formerly Diushambe), and the national flag is a red ground, with a gold hammer and sickle and name of the republic in the top left-hand corner. The leading cities (1936) are Stalinabad (49,600), and Leninabad (67,700).

**Area and Population.**—Area: 144,000 sq.km. of almost entirely mountain country, with, in the east, the Pamirs, the highest mountains of the Soviet Union, with vast glaciers. Population (1933), 1,333,000 (rural, 1,187,000, urban, 146,000), of whom 78.4% are Tajiks and 17.9% Uzbeks. The total number of pupils in schools (1936-37) was 199,000.

**History.**—The Sixth Extraordinary Soviet Congress at Stalinabad adopted on March 1 the new constitution of Tajikistan, according to which the republic includes 59 districts, besides the Gorno-Badakhshan autonomous province. The capital, Stalinabad, and the town of Leninabad form special administrative units. About 95% of the population took part in the elections to the Supreme Council of the U.S.S.R. At the beginning of October the president, the premier, and three other commissars of the republic

were removed from office as "enemies of the people," bourgeois Nationalists and Fascist agents, and arrested on charge of treason.

**Trade and Communications.**—The sown area (1936) was 2,616 sq.mi., and in 1937 89.9% peasant households were collectivized. Wheat, cotton plantations, fruit farming in the mountain valleys in the west, and cattle breeding in the mountains, are the main activities.

Natural resources include water power, recently discovered minerals through the expeditions of the Academy of Sciences, non-ferrous metals, gold, silver, lead, oil, and coal. The retail trade turnover (1936) was 0.6 milliard roubles. Exports included cotton, fruits, silk, wool, tin, lead. There is a railway line from Stalinabad to Termez (253km), and several mountain motor roads. (S. YAK.)

**Tammany Hall.** New York city's Democratic organization experienced the most disastrous year in its history during 1937. Although an important mayoralty election was approaching, the first six months were wasted in factional disputes. Attempts to oust James J. Dooling as leader failed despite constant criticism of his control. Mr. Dooling died on July 26 just as plans were being laid for the mayoralty primaries. Internal dissensions were not ended by Dooling's death. N.Y. Representative Christopher D. Sullivan was elected as leader, but opposing factions remained whose members refused to back U.S. Senator Royal S. Copeland as the hall's choice for mayor. Judge J. T. Mahoney, a Tammany district leader, resigned to make the race against the organization's choice; while Copeland entered the Republican as well as the Democratic primaries. The primaries of Sept. 16 marked a severe defeat for Tammany, for their candidate was badly beaten by both the mayor and Judge Mahoney. Defeated in the primaries Tammany turned to the support of Judge Mahoney, although the Democratic contest had made close co-operation impossible. They met with no greater success as Mahoney lost to Mayor La Guardia by 450,000 even after receiving the support of Postmaster General Farley, Senator Wagner and Governor Lehman. Such a result indicated how greatly Tammany's influence had waned. So unpromising was the outlook for the future that the defeated candidate proposed abolition of the organization.

**Tanganyika,** formerly German East Africa, a territory held since 1920 by Great Britain under mandate from the League of Nations, bounded on the N. by Kenya and Uganda, on the W. by the Belgian Congo, on the S.W. by Northern Rhodesia and Nyasaland, on the S. by Mozambique, and on the E. by the Indian ocean. Its estimated area is 366,000 sq.mi., and its pop. (1935) about 5,135,000, including some 8,500 Europeans and 33,000 Asiatics. The governor is assisted by a nominated executive council and a legislature with a majority of official members. Dar-es-Salaam (pop. *c.* 30,000) is the administrative centre. The principal native language is Swahili; there are many Mohammedans and native Christians. There are two State schools and about 12 State-aided private schools for Europeans, over 50 Indian schools, and about 80 government schools for natives. Railways extend nearly 1,400 mi., and there are about 17,000 mi. of roads fit for motor traffic; 48 government and 6 private aerodromes exist. A great deal of the territory is under forest; the most valuable mineral produced is gold. Revenue (mainly from taxes, customs, etc.) for 1936 was estimated at £1,946,000, and expenditure at £1,925,000. Exports—for which the chief were sisal, cotton, and coffee—for 1936 were valued at £4,805,000, and imports at £3,201,000. East African currency based on the silver shilling of 100 cents is in use. In



1937 a company was formed to lease land in the southern highlands for cattle-farming by settlers with co-operative marketing and social amenities. Some rioting took place in September in the Moshi district, owing to native dissatisfaction with the prices received for coffee, the buildings of the Kilimanjaro Native Coffee Union being destroyed. It was announced at the end of the year that the governor, Sir Harold McMichael, would relinquish his post in Feb. 1938, on appointment as high commissioner for Palestine.

**Tangier.** An international zone of Morocco (*q.v.*) governed, under the sultan, by an international assembly. Area *c.* 225 sq.mi.; population, *c.* 70,000. The zone of Tangier is directly affected by the Spanish Civil War owing to its important position on the Straits of Gibraltar. In March, two Italian soldiers were wounded in a quarrel with Spanish Communists, and the Italian press accused of partiality the French magistrates in charge of the inquiry. France, on the other hand, suspected Italians and Germans of an unscrupulous use of propaganda in order to detach the people of Tangier from the sultan, their ruler, by attacking his representative the *mendoub*, and thus threatening the unity of Morocco, which was laid down in the Act of Algeciras.

**Tanks:** see ARMIES OF THE WORLD: *Aeroplanes and Tanks*; MUNITIONS OF WAR: *Tanks*.

**Tanner, Henry Ossawa** (1859–1937), American Negro painter, especially on religious subjects, is represented in such collections as the Luxemburg, the Metropolitan Museum of Art and the Chicago Art Institute. Born in Pittsburgh, June 21, 1859, the son of a bishop of the African Methodist Church, he studied art under Thomas Eakins in Philadelphia; but worked in a flour mill, taught at Clark university in Georgia, and was a photographer before winning recognition and backing as an artist in 1890. Some of his most important paintings are "Sodom and Gomorrah," "L'Annunciation," "The Three Marys," and "Two Disciples at the Tomb." He was made a Chevalier of the Legion of Honour and won many prizes for his work. He died in Paris, May 25, 1937.

**Tantalum:** see CHEMISTRY, APPLIED.

**Tariffs.** The history of tariffs and import quotas in 1937 was disappointing to those who hoped that the increase of world prosperity would bring about a reduction of the barriers to trade which had been erected during the depression. Increases of tariffs and intensification of quota systems almost balanced their opposites. More encouraging was the gradual widening of the area of previous reductions, or of intermediate tariff concessions, through the extension of the most-favoured-nation régime. There was also a tendency to replace clearing agreements by the less restrictive payments agreements with countries practising exchange control.

There was no major revision of the tariffs of either of the world's two leading trading nations, the United Kingdom and the United States (but see TRADE AGREEMENTS: *Great Britain*). The first place on the list of countries that lowered tariffs in 1937 was taken by Canada. In February she concluded with the United Kingdom a trade agreement, under which she reduced preferential duties on about 150 items and sub-items of her tariff list, representing roughly 40% of her imports from the United Kingdom. The Canadian budget contained further tariff reductions, including many on the intermediate and general lists, to which the way had to some extent been opened by the

agreement with the United Kingdom. In October, as a result of trade agreements with Australia and New Zealand, Canada lowered preferential duties on mutton and lamb, canned meats, wines, preserved eggs and fruits, hops, gelatine, and other articles.

The United Kingdom, in return for Canadian concessions, lowered duties on silk stockings and reed organs. Two other United Kingdom tariff moves had special causes. As a result of the shortage of steel, the protective duties on certain categories of iron and steel, imported under the quota agreement with the European cartel, were suspended in May, such goods paying thenceforward only the general duty of 10%. In April, world wheat prices having risen to the level of the British guaranteed price, quota payments on wheat were suspended; they were, however, reimposed in September.

Australia was another country of the British commonwealth that lowered barriers to trade in 1937. A wide revision of her tariff in June resulted in lower duties, especially preferential and intermediate rates, on many articles, including confectionery, felt piece-goods, iron pipes, tiles, and sanitary ware. In most cases, a proviso was attached allowing proportionate increases of duty if the Australian pound should appreciate. Reductions later in the year included, among lesser tariff items, linen piece-goods. In December, Australia decided to replace the import licensing system, which she had adopted under her trade diversion policy, by adequate protective duties, removing forthwith the restrictions on goods not competitive with Australian industry. The import quotas on motor chassis, however, were retained. The budget of the Union of South Africa also lowered a number of duties, including those on imitation leather, cash registers, drain-pipes, motor spirit, essential and mineral oils, clocks and musical instruments. Provision was further made for rebate of duty on a wide range of goods when used as material for local industry. New Zealand, under an agreement with Germany, reduced intermediate duties on cameras, clocks, field glasses, builders' hardware, medicines, etc., and abolished primage duty on other items. Southern Rhodesia, revising its tariff in April, lowered duties on many goods imported from the United Kingdom. There were sundry consolidations and changes of tariffs in the British colonial empire, the balance being slightly upward. The Irish Free State continued to raise higher duties, the articles affected including wool yarns and linen and cotton piece-goods. She also extended her system of quota restrictions.

In Europe, the most important tariff changes were those of France. Budgetary difficulties and a great increase of imports caused her in July to impose a general increase of customs duties by 13%, together with some specific increases, notably on coffee and tea. There was, however, a long list of exceptions, which was extended as a result of the Franco-German trade agreement. In the later months of the year duties were increased on certain chemicals, millinery material, yarns and twine, bricks, tiles, drain-pipes, pottery, post cards, electric batteries, and tissues of linen, hemp, silk, and rayon, etc., etc.

The State-controlled import régimes of Germany and Italy continued without major modification. It was significant, however, that the big cuts in the German duties on rye, wheat, barley, and oats, which had been made temporarily in Dec. 1936, were prolonged indefinitely in August, while temporary cuts in the duties on fodder and certain fruits were announced in March; and that in Italy the reduced butter duty introduced in Dec. 1936 was followed in January by lower duties on wheat, maize, flour, and other wheat products. It was announced in July that all goods from Italian East Africa, except coffee, would be free of duty on import into Italy. Another notable German move was the large increases of duty imposed in June on rubber.

In eastern and central Europe there was, on the whole, a cer-



tain relaxation of trade restriction in 1937. In January, Czechoslovakia announced an easing of her system of exchange permits and import licences, and in the following months the requirement of exchange permits was abandoned altogether, though certain goods were added to the list requiring import licences. Switzerland removed some import restrictions in January. After adding a number of fresh items to the quota list in March, Rumania removed from it most categories of iron and steel in April, and hides, sulphur, and metallurgical coke in July. A contrary development was the levying of new consumption taxes on coffee, beer, cotton goods, and certain metal products. Poland, as a result of her trade treaties with Germany and France, lowered duties on certain machines, toys, wines, fancy leather, and hosiery, *inter alia*. Various temporary reductions in Polish tariffs were also made. Bulgaria imposed higher duties on toothbrushes, trimmings, asphalt, yarns and threads, etc., but her new tariff of Sept. 1936 had involved many and considerable reductions. Hungary added extensively to her import restrictions in Feb. 1937, and in January Greece adopted a thorough-going revision of her import control system in the general direction of greater restriction. She followed this with higher duties on rice, accumulators, fertilizers, and other goods.

Turkey also modified her import restriction system in 1937 (July), but in the opposite sense. Among other provisions, unrestricted import would thenceforward be allowed from countries with which Turkey had (a) a net favourable trade balance, or (b) a clearing or similar agreement granting her a margin of not less than 20% between imports and exports. The first category included the United States and the second the United Kingdom. Among Turkey's many tariff changes during the year were increases on leather, shoes, woollen tissues, knitted goods, cement, glassware, iron and steel wire, iron pipes, coke, and accumulators; and decreases on paints and varnishes, some hides and leather manufactures, raw wool and woollen yarns, cotton and linen yarns, jute, timber, iron ore, plate glass, and musical instruments.

Among the northern European countries, there was the same lack of an obvious trend in tariff and quota policy. (*See, however, the new arrangement among the Oslo group of Powers, under TRADE AGREEMENTS: Great Britain.*) Sweden, along with some decreases, imposed higher duties on grapes, iodine, and leather for glove-making, and decreed that milk and dairy products might be imported only with a permit from the state agricultural board. Belgium made a number of adjustments, some upward and some downward, in her tariff, including higher duties on certain footwear (November). She also extended her import licence system to margarine and edible fats. The Netherlands was content generally to prolong her quota system. The Netherlands East Indies extended their quota list to include a number of new commodities; and submitted their tariff to a general revision which included a substantial cut in the duties on cotton piece-goods, underclothing, stockings, etc., but also a number of increases.

Outside Europe, apart from the changes already recorded, the most important development was the restriction of imports by Japan after the outbreak of the war in China. In August she imposed higher duties on motor cars and parts thereof, and certain other articles, and in October she introduced a system of import and export licences affecting most foodstuffs, cotton, wool, leather, chemicals, jute, silk, flax, yarns, various tissues, clothing, paper, cement, watches, cycles, motor-cars and engines, etc., etc. Of the Latin-American countries, Bolivia raised her tariff by 60% in March; Mexico in January modified 677 important tariff items mostly upward; Cuba increased the duties on vegetable oils (March); Panama put a number of articles on the free list, and lowered the duties on various chemicals and infant foods, but raised those on soap, hair creams, and sparkling wines (March);

Venezuela made a number of changes in each direction (March); Chile imposed higher duties on whisky and on motor-cars, chassis, tires and parts (November); Salvador, under her trade agreement with the United States, lowered duties on ham, fruits, sawn wood, rubber tires, and gramophone records (April), and later (July) those on celluloid, sanitary ware, and other articles. (H. V. H.)

**Tasmania,** a State of the Australian Commonwealth, forming an island 26,215 sq.mi. in area to the southeast of the mainland, from which it is separated by 140mi. of Bass Strait. The State governor, representing H.M. King George VI, is Sir Ernest Clark, K.C.B. Population (March 1937), 233,191, comprising 3.4% of the population of Australia. Capital, Hobart; population, with suburbs (1937), 64,480. The premier of a Labour government is Mr. A. G. Ogilvie, K.C.

**History.**—A general election for the House of Assembly took place on Feb. 20, 1937. The resulting party strengths were as follows (results of 1934 election in parentheses): Labour, 18 (15); Nationalists, 12 (14); Douglas Credit, 0 (1). A bill for the reform of the legislative council was accepted unanimously by the House of Assembly, where the Government and the Opposition reached a compromise, and was brought before the Council late in 1937. It abolished the council's power to reject money bills, but provided that, on the initiative of the council and with the advice of the chief justice, the governor might strike out of a money bill any item of expenditure not within the category of ordinary government service. Should the legislative council reject an ordinary bill, the measure empowered the Government to seek a dissolution.

In 1936-37 the Tasmanian building industry had one of the most expansive years in its history. Reckoned per head of population, the value of building permits in Hobart exceeded the equivalent figures for the four greatest cities of the Australian mainland. Other economic indices also moved to prosperity levels in 1937 (*see below*). An important new development in transport was the carriage of mails by air across Bass Strait without surcharge. Four crossings were made daily, and the normal mail traffic was estimated at 25,000 letters daily in each direction.

**Trade, Industry, and Finance.**—Production in 1936-37 was valued (net) as follows (preliminary figures): agricultural, £2,009,000; pastoral, £1,567,000; dairying, poultry, and bees, £853,000; forestry, fishing, and trapping, £657,000; mining, £1,976,000; total, primary industry, £7,062,000; manufacturing industry, £4,209,000. The Government's economic adviser estimated that in 1936-37 about 5,850 persons were without normal full-time employment, representing about 9% of those available. Corresponding figures for 1935-36 were 6,500 and 10%. There is considerable seasonal unemployment in the State.

The budget for 1936-37 yielded a surplus of £44,906, instead of the small deficit that had been estimated. For 1937-38, revenue was placed at £3,515,201 (against £3,488,524 received in 1936-37), and expenditure at £3,512,569 (against £3,443,618). Land tax was remitted on agricultural, pastoral, or the like properties having an unimproved value of less than £3,500; the loss of revenue was made good by increases of tax on non-rural lands. Net loan expenditure, 1936-37, £814,950. (H. V. H.)

**Tate Gallery:** *see* ART EXHIBITIONS; ART GALLERIES AND ART MUSEUMS.

**Taxation.** The chief characteristics of recent developments are (a) the process of "steepening" the progression in taxes on wealth and income; (b) the use of taxation



as a means of achieving other social or governmental ends than revenue; and (c) the development of taxes on sales or turnover.

Progression in taxation achieved by the higher percentages charged upon the wealthier people is no longer based in principle merely upon the idea of "equal" sacrifice, but is advocated widely as a means of redistributing wealth. Out of the fund so provided by the rich, the social services and pensions of the poorer members of the community are financed. It is urged that it is better, under an individualist system of society, not to try to fetter the making of profits and the personal initiative, but to allow the fortunes to be made and then to take high toll of them for social purposes. In consequence, at the highest ranges or "brackets," rates of 60% or more are accepted as reasonable, and an average rate over the whole approaching 50% is not uncommon. Nor are people any longer greatly shocked to see that when "death duties" are reduced to an annual equivalent, the total annual taxes for a wealthy man may exceed 100%, inasmuch as the keeping of individual capital intact in large blocks is no longer thought a sacred duty. Moreover, the social value of excessive saving by the rich is called into question in many fields of economic analysis. A general consequence of the high rates is the development of ingenious methods of legal avoidance—by establishing private corporations or companies (especially abroad) which receive and accumulate the income, and by various types of trusts—and the continual struggle of the legislative side to circumvent and discourage these devices.

Accompanying the sharper progression at one end of the scale we have a spread of devices at the lower end to make direct taxes reflect more exactly the personal status of the taxpayer in the compulsory use to which he has to put his income, *e.g.* allowances for children, for housekeepers, for dependent relatives, for sickness, and the like. In most advanced countries the income taxes are approximating to a greater similarity than formerly, although there are still wide disparities. The difference between the treatment of "capital" profits or gains in the United States compared with British and European systems is a striking instance.

The developments indicated have now led into a wide-spread view that taxation expedients are rightly used to promote non-fiscal objects. For long the only field in which this was prevalent was that of protection of particular industries by customs duties, and now that Britain, since 1931, has given up taxation for revenue only, the arrangement of tariffs to develop certain economic ideas is general. But tariffs have also developed widely as defences against a non-industrial competition—the competition of depreciated currencies. When a currency in country A has been "devalued," it has to give in exchange more units for a given currency unit in country B which has not altered its currency. An exporter from A to B gets the same price in B's currency as before, but this exchanges for more units of his own, and if he has not to pay in rent, interest, and wages a fully increased number of his own units, he has a greater margin of profit in his own units. This enables him to reduce prices in B, and become a formidable competitor—at any rate for a time. To ward B off, A then increases the tariffs on B's goods. These defensive tariffs in one form or another have multiplied greatly. Special taxes on income going abroad are designed to achieve ulterior objects, such as discouraging investment by foreigners in the home securities; the 10% recently applied in the United States is an example. A tax on undistributed profits of corporations is intended to prevent hoarding by companies, which is regarded as deflationary, and to push purchasing power into the hands of the stockholders, so that their spendable incomes will be increased. This is the use of taxation as means to achieve special economic ends. As a rule they have unexpected repercussions and are clumsy means to the end desired. Perhaps the most thoroughgoing use of taxes to

promote social objects or hinder social tendencies has been elaborated in Germany. The object of the legislature has been "to reorganize taxes to make them fit the policy of national socialism, with reference to population, social welfare, economics and national socialist philosophy." As a consequence there are taxes on bachelors and spinsters to change their numbers and provide funds for marriage loans; new capital equipment in businesses at particular dates is favourably treated; automobiles purchased at particular times are differentially treated; employment of girls is encouraged; the taxation of partnerships is reduced and that of companies increased to stimulate personal responsibility.

The growth of taxes on sales has been remarkable, and there is no instance in the whole history of taxation of such a rapid development. In a few years over 30 nations had adopted them, and in the United States between 1929 and 1934 the spread was rapid. In France many commodities have been specially excepted, to be subject to special taxes, and in general the tax requires no exact figures or evidence—it is based on estimates, with outward signs. It causes wide changes in business methods and tends to favour large integrated companies. In the United States, probably the decline of the personal income tax in the depression of 1931–35, with the necessity to maintain and even increase revenues, was an important reason for the spread, and the reduced valuations for the State property taxes were another cause. In North Carolina, for example, the policy for schools seems to have been closely related to the sales tax. The experiments in the different States are widely different. Great Britain has not adopted it, because it is "regressive" on the poorer classes, but it is found in the majority of modern States, and when once it has been adopted it is often modified but rarely abolished. (*See also EXCESS PROFITS TAX; GASOLINE TAX; GIFT TAX; PROCESSING TAX; SALES TAX; STATE LEGISLATION: Tax Legislation.*) (J. S.)

**Tea.** During the years 1929 to 1932 stocks of tea throughout the world mounted rapidly, prices fell, and it was clear that world supplies were becoming far in excess of world absorption. These conditions gave rise to the international tea regulation scheme promoted on April 1, 1933, to control supplies from the main tea-exporting countries, India, Ceylon, and the Netherlands East Indies, and still in existence. The other countries, notably China, Japan, and Formosa, and, to a lesser extent, French Indo-China, Nyasaland, Kenya, and other African countries which produce and export tea, are not yet parties to the regulation scheme, while the tea produced by Russia in the Caucasus, is all consumed locally. A "standard export" figure was fixed for each of the three regulating countries, and each year they are allowed to export a certain percentage of that standard. Since 1933 the percentage has been as follows: 1933–34, 85%; 1934–35, 87½%; 1935–36, 82½%; 1936–37, 82½%; 1937–38, 87½%.

During the current season stocks fell very considerably, with a corresponding rise in prices, and on Nov. 30, 1937, it was announced that the figure of regulation for the year 1938–39 would be 92½% of standard. If it is proved that the world's markets are able to absorb this increased quantity, it will be seen that the industry is moving in the direction of de-control.

The following table gives the total exports of tea from producing countries:

Quantities in Million Lbs. Year Ending March 31

	Regulating Countries				
	1932-3	1933-4	1934-5	1935-6	1936-7
India . . . . .	381.1	322.6	337.9	319.5	305.1
Ceylon . . . . .	258.8	197.0	220.2	215.9	206.3
N.E.I. . . . .	186.6	136.2	145.2	146.5	147.8
	826.5	655.8	703.3	681.9	659.2



Quantities in Million Lbs. Year Ending March 31

Non-regulating Countries					
	1932-3	1933-4	1934-5	1935-6	1936-7
China . . . . .	91.4	91.5	102.1	91.0	90.3
Japan . . . . .	27.8	32.9	28.0	37.3	38.0
Formosa . . . . .	14.9	16.6	22.2	20.4	22.0
French Indo-China . . . . .	1.5	1.6	2.8	2.5	3.0
Nyasaland . . . . .	3.0	3.7	5.4	6.7	8.6
Kenya . . . . .	1.1	2.0	2.9	6.0	8.0
Other African Countries . . . . .	.3	.4	.4	.5	1.3
	140.0	148.7	164.7	164.4	172.1
Grand Total . . . . .	966.5	804.5	868.0	846.3	831.3

Clearly, there has been a marked increase in recent years from non-regulating countries, whose competition will have to be reckoned with if regulation is ultimately discontinued.

The following table gives a summary of the absorption of tea throughout the world:

Quantities in Million Lbs. Year Ending March 31

	1932-3	1933-4	1934-5	1935-6	1936-7
United Kingdom*. . . . .	427.2	432.4	436.3	451.0	463.3
Europe (excluding the United Kingdom) . . . . .	114.6	130.8	123.1	128.0	110.0
North and Central America . . . . .	132.3	130.8	110.8	121.4	130.6
South America . . . . .	10.2	8.6	10.1	11.2	11.3
Asia . . . . .	20.2	32.9	41.8	35.5	48.4
Africa . . . . .	62.2	61.4	60.7	65.0	74.0
Oceania . . . . .	59.1	59.7	54.1	50.1	50.2
Producing Countries (Tea not locally produced) . . . . .	14.5	9.8	8.1	9.4	8.6
Total . . . . .	849.3	866.4	845.0	877.6	902.4

\*Largest tea consumer *per capita* in the world.

**Technical Training:** see VOCATIONAL EDUCATION.

**Technicolour:** see PHOTOGRAPHY.

**Telegraphy.** The year 1937 was characterized by the development and practical application of previously known principles rather than by the introduction of epochal inventions.

**Automatic Tie-Line Switching.**—This device provides a means whereby any one of a number of customers equipped with teleprinters may automatically transmit telegrams direct to the central telegraph office over one of a number of trunks. This arrangement is useful where the expense of direct lines from central office to each customer would be prohibitive.

**Carrier Systems.**—This method of securing a number of telegraph channels from a few line wires by means of electric currents of different frequencies has been improved to permit a further increase of the number of channels which may be secured from a given number of line wires.

**Facsimile Transmission.**—Facsimile transmission was given a new impetus by the successful application of a simplified method of reproduction. Gradations of scanning light reflected from original copy carried upon a revolving drum are transmitted as electrical impulses. At the receiving end these signals are amplified and applied through a stylus to mark electro-sensitive dry recording paper moving upon the drum of a synchronized receiving machine. The received copy requires no processing and is ready for immediate delivery.

**Message Conveyors.**—One of the methods by which messages are conveyed from point to point in large telegraph offices is by means of moving belts. Improvements in belt design have made it possible to increase their maximum speed from 500 to 1,000 ft. per minute.

**Ocean Cables.**—Improved vacuum tube amplifiers, measuring and balancing devices, repeaters, increased voltages, etc., have improved and stabilized operating conditions and afforded more efficient use of ocean cables. The use of direct multiplex channel

circuits, operated by printer, between important cities on both sides of the Atlantic has increased.

**Power Plants.**—Mercury vapour tubes are utilized to provide rectifier units replacing expensive dynamo plants. Portable emergency power plants, consisting of a gas engine coupled to a generator, have undergone steady improvement.

**Press Services.**—An important development in connection with telegraphic facilities furnished to press associations has been the establishing of circuits usually beginning and terminating at the headquarters of the association and serving a number of newspapers in distant cities. One of the important features of this type of circuit is that it permits any newspaper on the circuit which has transmitting facilities to cut the circuit at that point and send two separate stories simultaneously to all other stations.

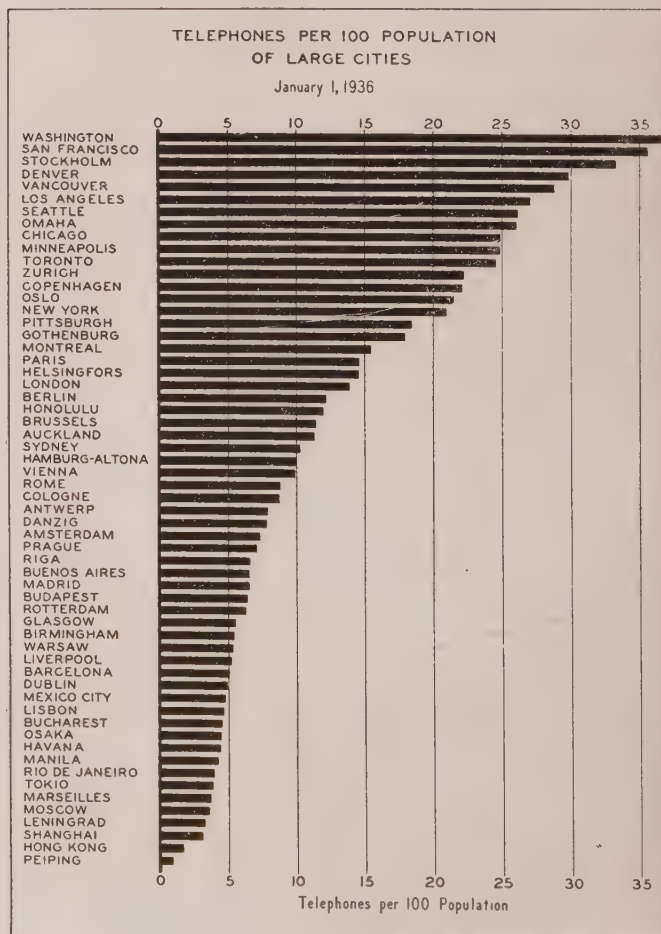
**Reperforator Switching.**—Telegrams are relayed between printing telegraph circuits expeditiously and economically by a system of reperforators and intra-office circuits which require but one simple switchboard operation to replace manual reception, distribution and re-transmission.

**The Varioplex.**—This device makes it possible for a group of subscribers economically to share the full transmission capacity of a group of telegraphic circuits which is available to all and which is fully and equally shared among subscribers working directly with each other at any instant. This affords a most efficient use of trunk wire capacity.

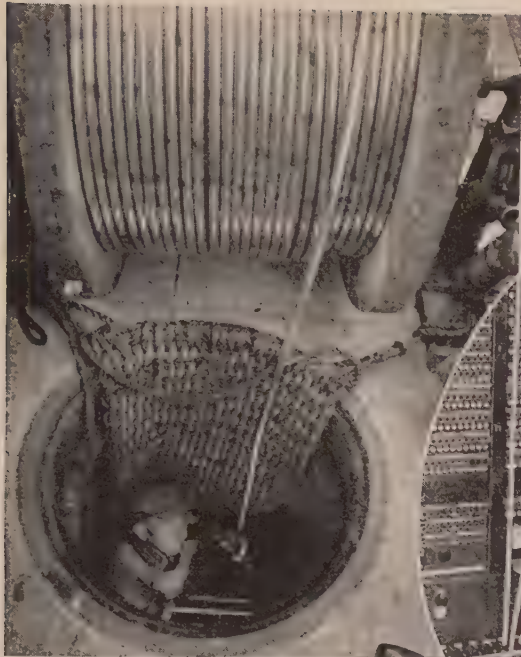
(N. C.)

**Telepathy:** see PSYCHICAL RESEARCH.

**Telephone.** Many technical advances in the last eight years have led to the attainment of higher standards of telephone service. Notable among them are important improvements in the design of the telephone transmitter and receiver and other subscriber apparatus, and improvements and extensions in

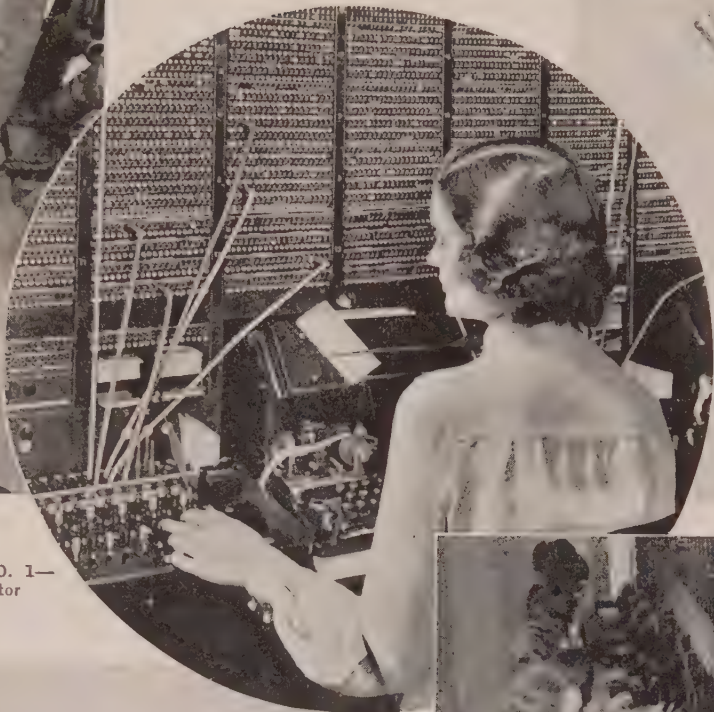






COAXIAL CABLE being drawn into conduit

NEW YORK-PHILADELPHIA COAXIAL CABLE



TELETYPEWRITER SWITCHBOARD NO. 1—  
front view of regular position with operator



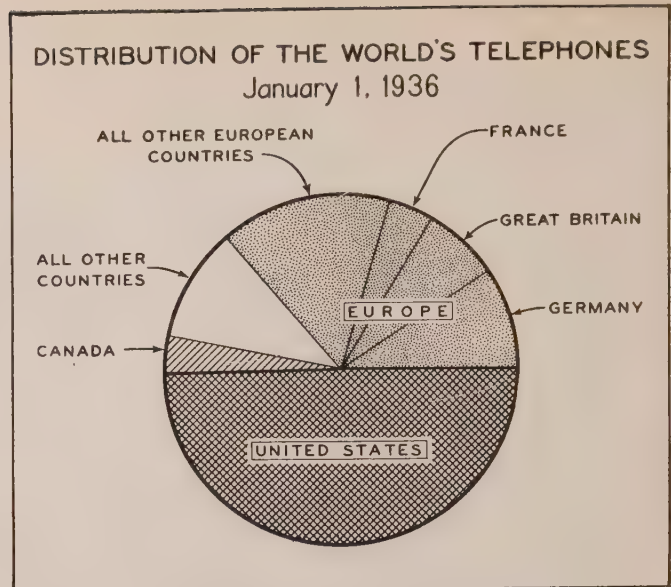
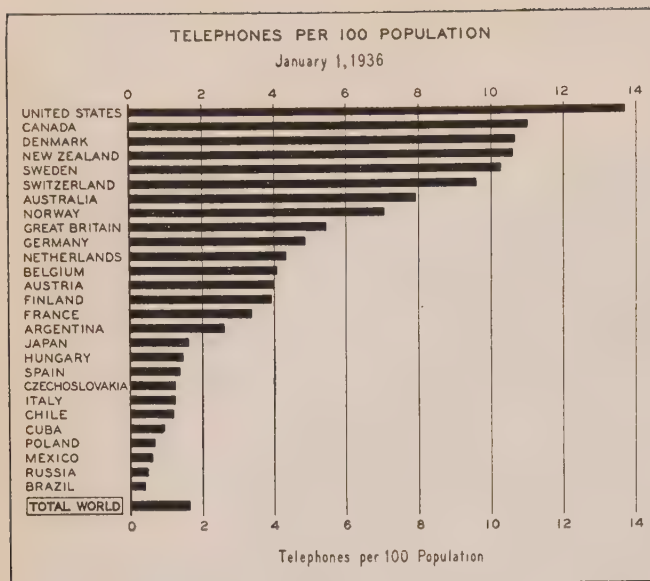
WIRE LAYING PLOW

TELETYPEWRITER SWITCHBOARD in Central Office

Close-up of WIRE LAYING PLOW







the line and radio facilities for long distance communication. The use of dial telephone equipment in central offices has also been carried in most countries well beyond the point at which it stood in 1929. The present article will, in so far as is possible in a few words, bring up to date the information of that year.

The most spectacular telephonic advance, in that it has broken new ground, is to be found in the numerous overseas radio channels which are now operating on an international basis. The first of such channels was that between the United States and England. It is of the so-called long-wave type (eastbound frequency is 60 kilocycles and westbound 68 kilocycles) and was opened for service in 1927. Since then it has been supplemented by three short-wave channels. This group of circuits is the largest and perhaps the most important single overseas group. But the demand for international telephony has grown so rapidly that within the decade more than one hundred and seventy-five overseas radio telephone circuits for the handling of public message business have been created, and cover the earth as a very substantial yet invisible network.

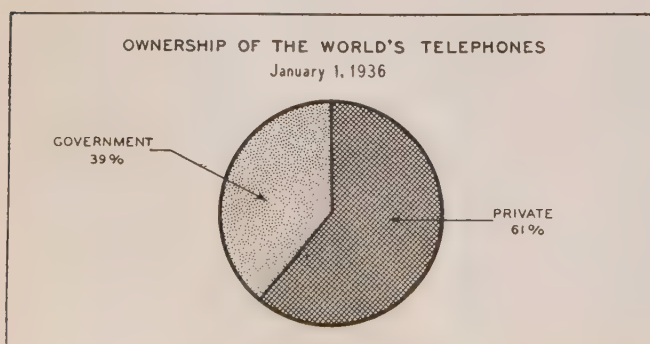
Today 98% of the world's telephones are interconnected. Behind this rapid advance in international telephony stand, of course, important developments in the instrumentalities of radio communication. Notable among these may be mentioned water-cooled vacuum tubes of large power, greatly improved antennas, and improved auxiliary devices for the more effective overcoming of the interference which is inevitably associated with radio transmission.

Paralleling these overseas extensions which have been made possible by the radio telephone, additions of very fundamental importance have been made to the long distance land lines, both in the United States and in Europe. Wherever possible these addi-

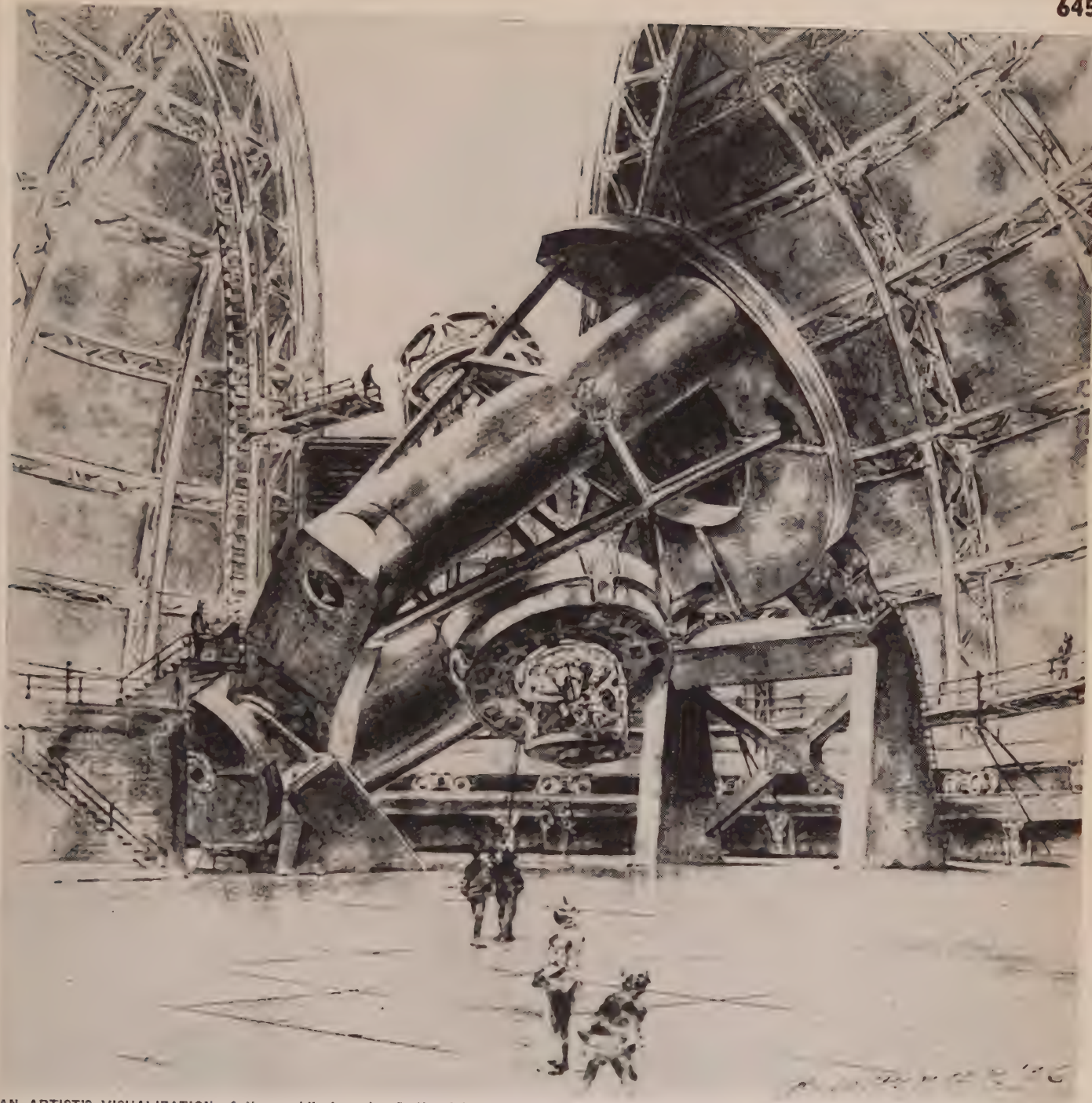
tions have taken the form of lead-covered cable, each cable containing several hundred distinct circuits. The advantages of the cable circuits as compared with open wire lines arise particularly from their increased electrical stability and freedom from failure because of storms, and hence increased reliability in service. By virtue of this important characteristic, the toll cable network of backbone circuits has contributed significantly to the maintaining and extending of a very rapid long distance service.

In spite of the fact that the usual toll cable carries as many as two hundred to four hundred individual lines, the problem of multiplexing these lines by the "carrier" principle has assumed economic importance in view of what we envisage as the future needs. The development of a very successful twelve-channel system has been effected and so far as the United States is concerned numerous installations are under way. As an additional instrumentality for providing more abundant long distance circuits in the future, the so-called coaxial cable is now in its trial stages. In brief, it also operates on the multiplex or carrier principle, enabling two pairs of conductors (each pair consisting of a wire surrounded by a concentric pipe and transmitting in one direction only) to provide between two hundred and five hundred telephone channels, depending upon the range of the filters and the amplifying devices, or repeaters, with which the cable is equipped. This type of cable will also be used for the transmission of television programs whenever such a demand arises. It will be appreciated, of course, that in the case of the coaxial cable, by far the major portion of the development work has necessarily centred on the amplifying and filtering (or band-splitting) devices which are needed. The transmission loss of the cable is such that the message currents must be re-amplified every five to ten miles, while the filters used to separate the hundreds of messages from one another without extravagant waste of the frequency bands separating the channels represent the practicable limits of present-day refinement.

A very significant research program of the decade just passed is that which has culminated in fundamental improvements in the basic instruments of telephony, the carbon transmitter and the receiver. These improvements are available in the United States in all models of subscribers' sets; they can be applied as readily to the combined hand set as to the older wall and desk types. These developments yield superior results, partly because of better quality and partly because they make possible a higher level of transmission. Although not directly connected with improvement







AN ARTIST'S VISUALIZATION of the world's largest reflective telescope on Mt. Palomar

in the transmitter and receiver, it should be noted that the anti-sidetone type of subscriber's set has been accorded almost universal adoption within recent years.

The transformation of central office equipment from the manually operated to the dial operated type has proceeded steadily both in the United States and abroad. As yet, no outstanding changes in the equipment have been described. An important new system known as the cross-bar system has, however, been completed and will shortly be available for detailed discussion.

From the subscriber's point of view, the net result of the improvements just cited—and all of them are of a major character—has been a steadily bettered service when considered from such dominant standpoints as cost, speed of service, and interruptions or failures due to equipment faults. The variety of services offered has also grown. Thus, by the recently inaugurated

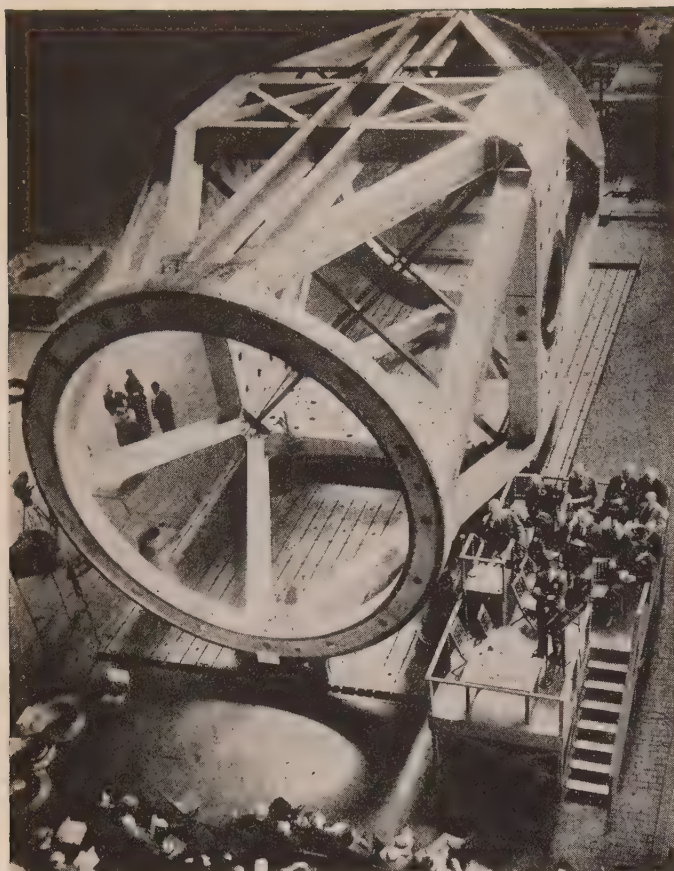
conference call, persons numbering up to ten or twelve and scattered hundreds of miles apart can be assembled telephonically in a few minutes' time, and can carry on a discussion as though seated around a table.

(W. S. G.)

**Telescopes.** Of the large telescopes planned for use at observatories throughout the world the following are in course of construction:

**200-inch Reflecting Telescope (F 3.3)** of the California Institute of Technology. Designed in co-operation with the Mount Wilson observatory of the Carnegie Institution of Washington. Located on Palomar mountain in Southern California where the steel dome 135ft. in diameter is under erection. The front surface of the 200-inch disc has been ground to nearly the required depth and the telescope tube 60ft. long and 22ft. in diameter is com-





**TUBE 60 FEET LONG** for the world's largest telescope, the 200-inch reflector being erected at Mt. Palomar, California. It will bring the moon in effect within 24 miles of the earth

pleted. Work is well advanced upon the mounting, including the massive crescent-shaped frame which will provide the main bearing for the telescope through a system of oil films maintained under high pressure. A complete model of the telescope (scale 1:10) with optical parts has been built and tested.

**82-inch reflecting telescope (F 4)** of the McDonald observatory of the University of Texas in co-operation with the Yerkes observatory of the University of Chicago. Located on Mount Locke in Western Texas. Buildings, mounting, and several auxiliary instruments completed but optical work still in progress.

**74-inch reflecting telescope (F 4.9)** of the Radcliffe observatory, Oxford. To be located at Pretoria, Union of South Africa. Mirror disc recently cast and mounting under construction. Auxiliary instruments under design.

**21-inch twin photographic refracting telescope (F 7)** of the Lick observatory of the University of California. To be located on Mount Hamilton, California. Optical figuring of the lenses commenced and mounting under construction.

The most important development of the year has been the growing use of the type of telescope first designed by Bernhard Schmidt of Germany, and its adaptation for use in spectrographic cameras. It consists of a concave spherical mirror with a thin glass plate placed in the incident beam of light specially figured to correct the aberration. Aperture ratios as high as  $F 1$  may be obtained in this way and the combination gives very high photographic efficiency. With the use of plates or films curved to the focal radius a field of  $10^\circ$  or more may be obtained in excellent definition. Two such telescopes, one with an aperture of 44cm., at Bergedorf, Germany, and one with an aperture of 18 inches on Palomar mountain, California, are in regular use. A considerably larger instrument is under consideration for the Palomar Moun-

tain observatory as an adjunct to the 200-inch telescope.

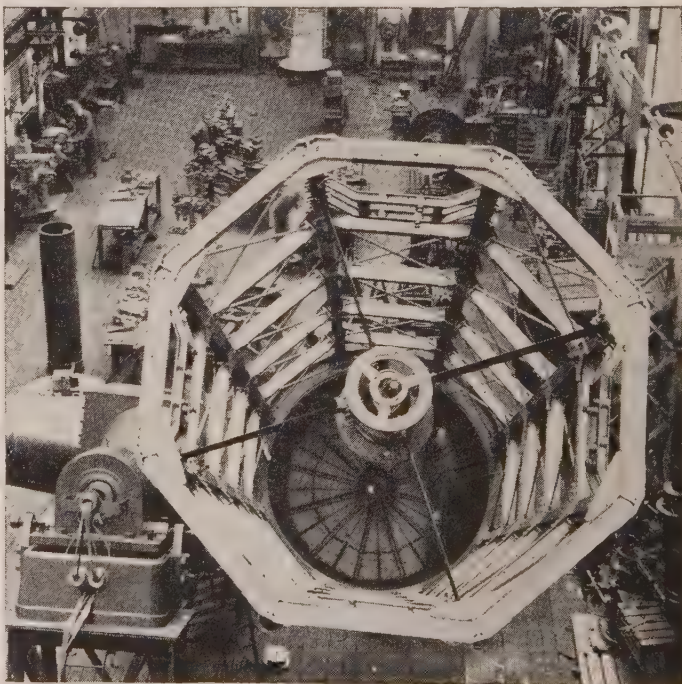
(W. S. Ap.)

**Television.** From about 1926 onwards, experimental transmissions of what is usually termed "low definition" television were carried out in several countries. The standards used varied between 30 and 120 lines per picture, with a frame frequency as low as  $12\frac{1}{2}$  per second in some cases. Such transmissions have never been developed successfully on a commercial basis, but they resulted in attention being paid to higher standards of definition, progressing in stages from 120 lines up to some 400 or more.

At the beginning of 1937, the only practical use to which television had been put was for a public broadcast service in London using a high standard of definition. Experimental broadcast services, also using high standards of definition, were in operation in several countries, notably the United States, Germany, and France, to which further reference will be made.

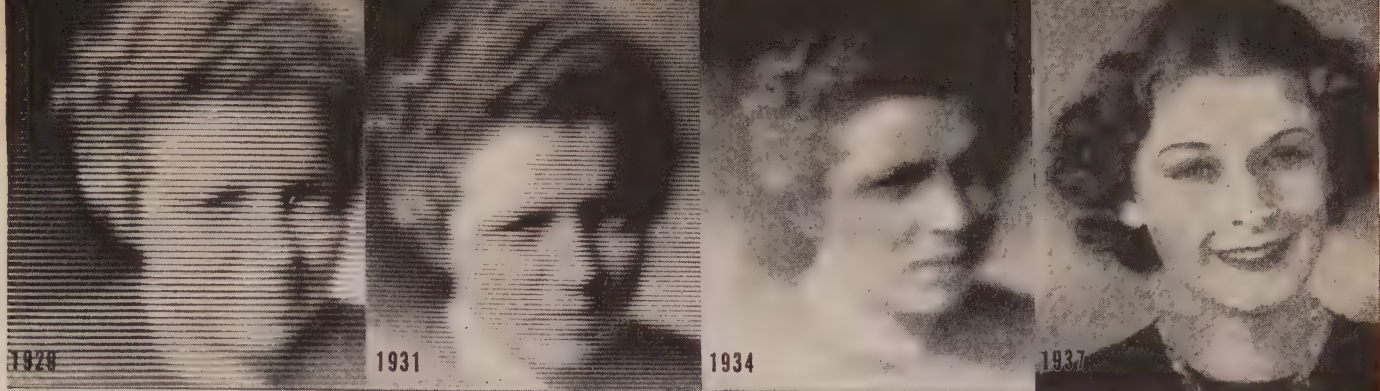
**United States.**—In the United States, an experimental service, not intended for general public reception, was operated by the National Broadcasting Company during the latter part of 1937. A large number of receivers were distributed to interested persons for observation purposes. The transmitter aerial was situated on the Empire State building, which is approximately 1,250ft. high, while the studio was situated in the National Broadcasting Company's headquarters in Radio City. Experimental programs were transmitted, using, at first, 343 lines per picture with 30 pictures per second interlaced, giving a repetition frequency of 60 per second; later, the number of lines was increased to 441. The peak power of the vision transmitter was 30 kilowatts. The system used for the pick-up depended on an electron camera device developed by the Radio Corporation of America, differing somewhat from that used in England. A frequency of 49.75 megacycles per second (6.03 metres) was used for transmitting vision and 52.0 megacycles per second (5.77 metres) for the accompanying sound.

The signals, although basically similar in form to those used in England, differed particularly in that their polarity was



**LOOKING DOWN THE TUBE** of the second largest telescope in 1937 prior to its shipment to Pretoria for the Radcliffe Observatory there. It has been constructed at the optical works at Walkergate-on-Tyne





FOUR PORTRAITS showing technical progress in television transmission from 1929 to 1931 and to 1934 and 1937

reversed. That is to say, in the case of the American method, the synchronizing impulses raised the transmitter output to a maximum, while in the English case they reduced it to zero. The sense of the vision signals representing tonal gradations from black to white was also similarly reversed.

The studio was connected to the main transmitter by a special cable as well as by an ultra-short wave link transmitter. Towards the end of the year, the National Broadcasting Company acquired mobile equipment for transmitting events not occurring in the studio. Also towards the end of the year the Columbia Broadcasting System of America announced the construction of a television station in New York, the aerial of which was to be mounted on the summit of the Chrysler building. It was stated that the peak power of the vision transmitter would be 30kw., and that the station would be ready for operation during 1938.

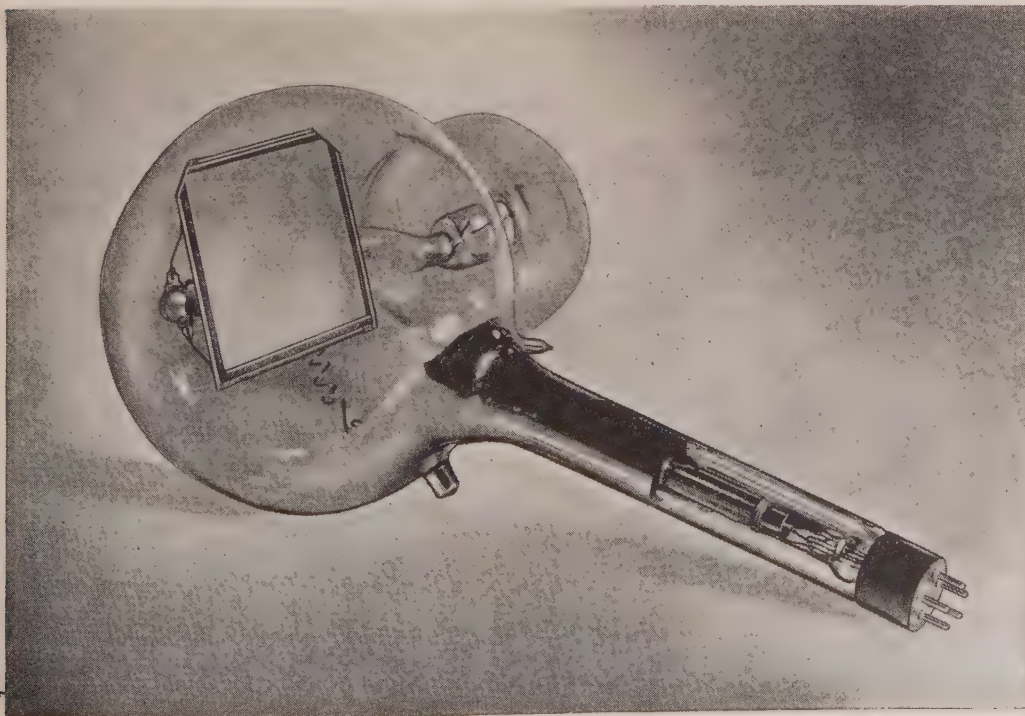
**Great Britain.**—In England, the broadcast television service was opened by the British Broadcasting Corporation on Nov. 2, 1936, and at the same time suitable receivers were made available for purchase by the public. The station was situated at the Alexandra Palace in the London area, approximately 5mi. north of Charing Cross, and some 300ft. above sea level. The normal range was about 30mi. although reception in certain directions up to 100mi. or more has been recorded.

At the London television station a duplicate plant was installed, following two distinct systems, which at first were used during alternate weeks. One system, developed by the Marconi—E.M.I.

Television Company, employed interlaced scanning with 405 lines giving 25 complete pictures per second. According to this system, the number of frames per second is 50, each frame consisting of  $202\frac{1}{2}$  lines, the lines of successive frames being interlaced. Thus the effective number of repetitions, from the point of view of picture steadiness, was 50 per second, while the amount of detail transmitted corresponded to 405 lines, the equivalent modulation band width being only one-half that necessary to transmit 405 lines per picture for 50 pictures per second sequential scanning. The method used for transmitting both living subjects and cinematograph film depended on an electron tube device, based fundamentally on a suggestion by Campbell Swinton in a letter to *Nature* in 1908, and given practical effect in an American device known as the "Iconoscope." The tubes used in England were developed and manufactured by the research department of the Marconi—E.M.I. Television Company in London, and bear the trade name of "Emitron." They contain a screen measuring about 5in. by 4in. (12.7cm. by 10.2cm.), consisting of a mosaic of minute light sensitive cells on to which an image of the scene to be televised is focused by an optical system similar to that used in an ordinary photographic camera. The screen is scanned by a fine electron beam, which has the effect of setting up currents corresponding to the amount of light falling on each element forming the mosaic. The currents derived from the electron tube are transmitted, together with electric pulses to provide the necessary synchronization between the transmitting apparatus and the receivers. The apparatus

will operate satisfactorily either in natural or artificial light, the technique used in the television studio being somewhat similar to that in a film studio. The apparatus for reproducing the sound is similar to that used for ordinary broadcasting.

The second system, used as stated during alternate weeks, was developed by the Baird Television Company, and produced a 240-line picture with 25 pictures per second, sequentially scanned. The frame frequency in this case was therefore 25 per second. Scanning was carried out by mechanical devices consisting of an adaptation of scanning discs of the Nipkow type. One method of televising from a studio consisted of photographing the scene on a cinematograph film, with a special process of rapid



THE ICONOSCOPE or eye of the television camera



automatic development, immediately afterwards scanning the film, under water, through the walls of a glass-sided tank. The delay between the instant of photographing the scene and transmitting it was somewhat less than one minute. In the case of this process the sound accompanying the television scene was also recorded on the film and reproduced by the normal method used for an ordinary sound film. The use of this second system for the public service in London was discontinued on Feb. 8, 1937, and the service was continued, using exclusively a standard of 405 lines 50 frames interlaced scanning.

The vision and accompanying sound signals were radiated by two ultra-short wave transmitters feeding two separate aerial arrays mounted, one above the other, on a common 300-ft. steel mast, the vision array being the uppermost.

The wavelengths used for the vision and sound transmitters were 45 megacycles per second (6.67 metres) and 41.5 megacycles per second (7.23 metres) respectively. The peak power of the vision transmitter was 17kw. and the unmodulated carrier power of the sound transmitter 3 kilowatts.

The Marconi-E.M.I. system was further developed during 1937 to enable events to be televised which took place at some considerable distance from the main transmitter. The first notable event of this kind to be televised was the coronation procession in London on May 12, 1937. Others were the International Lawn Tennis matches at Wimbledon, near London, in June, and the Armistice Day ceremony in London in November. For the latter, an improved form of electron tube was used in the camera allowing distant scenes to be transmitted effectively.

Two alternative methods have been employed for connecting the television apparatus to the main vision transmitter at Alexandra Palace. One consisted of a specially designed underground cable, with two air-spaced conductors capable of passing the wide band of frequencies (about two and a half megacycles per second) necessary for obtaining the required degree of picture definition. The other method, used for events where a cable connection was not possible for economic reasons, involved the use of a low-power mobile television transmitting unit operating on a wavelength of 64 megacycles per second (4.69 metres) in conjunction with a radio receiver installed in the same building as the main vision transmitter.

During the year, some 15 firms placed receivers on the market in London, the average size of the reproduced picture being approximately 8in. by 10in. (20.32cm. by 25.4cm.).

**Germany.**—In Germany experimental transmissions have been carried out for some years from the Funkturm at Witzleben, using 180 lines and 25 frames per second. Vision was transmitted on 44.3 megacycles per second (6.77 metres) and sound on 42.5 megacycles per second (7.06 metres). Receivers were not on sale to the public, but demonstrations were given at a series of viewing rooms in various parts of Berlin. Experimental work was carried out during the year by the German postoffice and several private firms on systems with a higher standard of definition. It has been announced that a new standard of 441 lines, with a frame frequency of 50 per second, interlaced, has now been adopted, and that further transmitters are being built to be in operation in 1938. One of these was to be situated on the summit of the Brocken, the second on the Feldberg in the Taunus mountains, and the third in the Rhineland.

**France.**—In France transmissions have been made for some time past from the Eiffel Tower, with both 60 and 180 lines and 25 frames per second. Unlike the practice in other countries, the accompanying sound has been radiated on the ordinary broadcasting wave of 1,456 kilocycles per second (206.0 metres). During 1937, a new high definition transmitter, having a peak power of 30kw., was installed in the Eiffel Tower station. This uses 455

## TEMPELHOF AIRPORT—TENNESSEE

lines, 50 frames per second interlaced, giving 25 complete pictures per second. This transmitter uses a frequency of 46 megacycles per second (6.52 metres), and in this case the accompanying sound is also transmitted on an ultra-short wave, namely, 42 megacycles per second (7.14 metres). During the Paris Exposition of 1937, high definition demonstrations were given, using electron camera apparatus.

During 1937, the possibility of developing television using a large screen, suitable for cinemas and theatres, was under consideration, and several firms were working on apparatus with this object in view. (See also BROADCASTING; ELECTRICAL ENGINEERING; RADIO, SCIENTIFIC DEVELOPMENTS OF.)

(N. As.)

**Tempelhof Airport:** see AIRPORTS; BERLIN.

**Tennessee,** the sixteenth State to enter the Union, popularly known as the "Volunteer State"; State flower, iris; State bird, mocking-bird; area, 42,022 sq.mi.; population according to the U.S. Census of 1930, 2,616,556; estimated July 1, 1937, 2,893,000. Capital, Nashville, 153,866. The only city with larger population is Memphis with 253,143. Of the



GORDON BROWNING, governor of Tennessee

State's population, 896,538 or 34.3% are urban; 2,138,619, whites; 477,646, coloured; 2,125,553 native-born white; 13,066 foreign-born white.

Tennessee's constitution was last revised in 1870. The Legislature in 1937 adopted the county unit plan of voting. Returns at the last presidential election were: Democratic 322,083; Republican 146,516; Socialist 685; Prohibition 632; Communist 326; Union 296. Governor, Gordon Browning; secretary of State, A. B. Broadbent; attorney-general, Roy Beeler; commissioners as follows: administration, Wallace Edwards; agriculture, John Goodman; conservation, Samuel Brewster; education, W. A. Bass; finance and taxation, Jordan Stokes, Jr.; highways and public works, M. O. Allen; institutions and public welfare, George Cate; insurance and banking, James McCormack; labour, Albert Gore; Public Health, W. C. Williams; and railways and public utilities, Peck Turner, Leon Jourolman, and Porter Dunlap.

**Education.**—Per cent of illiteracy in 1930 for whites was 5.4, for coloured 14.9. Of 6,134 elementary schools 1,465 had 3 or more teachers. One-teacher schools declined from 3,555 in 1927 to 2,887 in 1935. Enrolment in elementary schools was 567,157. In 1935 all but 8.5% of elementary teachers had more than high school training; 17.8% were college graduates. The State maintains seven institutions for higher learning with an enrolment of 10,800 students in 1934-35, and an estimated valuation of \$15,050,001. In addition there are separate schools for the blind, the deaf, and underprivileged children; three State hospitals for the insane; a home and training school for feeble-minded; and four training or correctional schools, namely for white boys, coloured boys, white girls, and coloured girls; a commission and workshop for the blind; and two State penitentiaries.

**Finance.**—In 1936 there were 72 national and 253 State banks, with resources of \$378,622,000 and \$128,306,000 respectively. Savings deposits averaged \$45 per capita, the State ranking 4th in



the South. Building and loan associations numbered 57, had 23,061 members, and assets of \$17,574,000. Insurance payments made by policyholders amounted to \$56,200,000 in 1935. In 1934 there were 505 companies licensed to write insurance in the State.

**Agriculture.**—There were 273,783 farms in 1935; 1,308,420 farm population; 19,085,837 acres in farms with 6,134,200 acres of crop land harvested. Estimated value of crop production was \$139,698,000 in 1936. Corn, 2,858,000 acres, 57,160,000 bushels; cotton, 810,000 acres, 431,000 bales; hay, 1,562,000 acres, 1,068,000 short tons; tobacco, 95,400 acres, 76,098,000 pounds. Cattle on farms Jan. 1, 1937, were 1,148,000; hogs, 992,000; horses and mules, 442,000. Cash farm income was \$137,104,000 in 1937. Tuberculin testing of all cattle in the State was completed in 1935. Commercial forest area in 1929 was 14,000,000 acres. The cut in 1935 was 337,008,000 board feet, total value of lumber products \$11,944,159, of which \$6,831,597 were added by manufacture.

**Manufactures.**—In 1935 there were 2,011 manufacturing plants yielding products valued at \$531,338,490, of which \$226,556,901 constituted value added by manufacture. Value of mineral production was \$25,743,471 in 1935. Bituminous coal production in 1936 was 5,070,000 short tons; phosphate rock 644,000 long tons. Value of phosphate rock produced was \$2,598,279 in 1936. Manufacturing and urbanization are making marked progress in the State.

The Great Smoky Mountain National Park with 174,230 acres in Tennessee attracted 727,243 visitors for the year ending Sept. 30, 1937. Cherokee National Forest, adjacent to the park, comprises over 505,000 acres.

(C. E. A.)

**Tennessee Valley Authority.** Created by an act of Congress in 1933 as a corporation to provide for the unified development of a great watershed area in order to make full use of all the resources of that area, the Tennessee Valley Authority has been conducting an experiment unique in the history of government planning and operation. The area involved in this experiment, 40,000 sq.mi., is roughly equivalent of that of England; the engineering problems involved in the development of the water resources of the rivers are the equivalent in financial value to that of the Panama canal. Although there have been a few instances of multipurpose projects, such as Boulder dam, never before has there been an attempt to plan and develop the resources of an entire river system for the maximum benefit of the entire region with respect to all purposes.

While it is still far too early for the success of the experiment to be definitely determined, a measure of the value of this development can be made by observing the progress in the fourth year of its existence. In 1937 two large dams—the Norris dam, a storage dam on one of the tributaries, and Wheeler dam on the main river—were completed and put into operation, while construction was materially advanced on four other dams, three of them—Pickwick Landing, Gunterville, and Chickamauga—on the main river and the fourth, Hiwassee, on another tributary. In addition plans were developed for Gilbertsville dam, the largest and nearest to the mouth of the river. Expenditures for these projects during the year totalled \$33,000,000.

Flood control is perhaps the most impressive element of the plans at the present stage; the Gilbertsville reservoir, for instance will have a storage capacity of 4,600,000 acre-feet for flood control alone and will reduce flood flows on the lower Ohio and Mississippi rivers by 200,000 cu.ft. per second thus materially aiding the flood protection works on the Mississippi river. The size of this reservoir and its effect for flood control is unprecedented. Its total cost will be in the neighbourhood of \$100,000,000. As all other Authority dams, this will be a multipurpose dam, serv-

ing the interests of navigation and power development as well as flood control. A demonstration of the value of the system for flood control was given during the great winter flood of 1937 when the Norris and Wheeler dams alone operated for flood control reduced the flow in the Ohio and Mississippi rivers by 32,000 cu.ft. per second and materially assisted in saving Cairo from flooding.

The value of navigation, of course, cannot accrue until a navigable depth is obtained for some important stretch of the river. While this cannot be accomplished for some years, already there have been many indications that once navigable depths are obtained industries will avail themselves of the more economical water transportation.

The creation of water power incident to the construction of the dams is a third purpose of importance. The two dams completed in 1937, together with the existing Wilson dam taken over by the Authority, provide an electrical capacity of 350,000 kw. with a firm power capacity of 260,000 kw. Many contracts have been made for the sale of this energy to municipalities, co-operatives, and some private industries at rates generally lower than those prevailing in this region. Numerous injunctions and litigation brought by the power companies have been dissolved by decisions favourable to the Authority, clearing the way for further expansion and sale of surplus power. That the program has not been detrimental to private interests is demonstrated by the fact that the three large private utilities in this region have increased their domestic consumption of electricity from 1933 to 1937 by from 44 to 92% as compared with the average rise for the nation of 20%. The Authority has also promoted greatly the rural electrification of the area, and, through experimentation, has developed additional uses for electricity such as hay drying equipment and freezing equipment for agricultural products.

Another important activity of the Authority has been the development of phosphate fertilizer in connection with the use of the electric furnace. Phosphate fertilizers of higher concentration have been developed, including a metaphosphate containing from 60 to 70% of plant food. This development, enabling the utilization of low grade phosphate deposits in the Western States, will have a permanent value with respect to conservation of this important element in soil economy. Linked with the fertilizer program has been soil conservation, including the encouragement of diversification in agriculture, terracing of hillsides, encouragement of animal husbandry, and the reforestation of denuded areas.

Other developmental work has been the investigation of the mineral resources of the area, the development of native kaolins for use in high grade pottery in connection with the electrical furnace, and the encouragement of co-operatives for collecting, grading, and marketing agricultural products. The encouragement of recreational areas, for which the lakes created by the construction of the dams are a contributing factor, is also an important activity. Since the completion of the Norris dam, in this reservoir alone—a lake with a shore line equal to that of Lake Michigan—more than 500 water craft have been put into operation.

In all of this activity the Authority has co-operated with numerous Federal agencies, seven State governments, and hundreds of local and county governments: an unprecedented experiment in co-operation, the success of which is not yet entirely demonstrated but which is well on its way toward fruition.

(A. E. M.)

**Tennis:** see LAWN TENNIS.

**Terauchi, Juichi** (1879— ), minister of war in Japan, was graduated from the Military Staff college in 1900. He was successively chief of the general staff of the Chosen army, commander of the 4th and 5th



divisions, commander of the Taiwan garrison, member of the Military Council, minister of war and chief of Manchurian affairs. General Count Terauchi is one of the five Japanese generals who compose the powerful Military Council. The Council is responsible only to the emperor and is independent of the prime minister and the Japanese cabinet. General Terauchi and his co-members of the Military Council determine the military policies which are today the dominant activities of Japan.

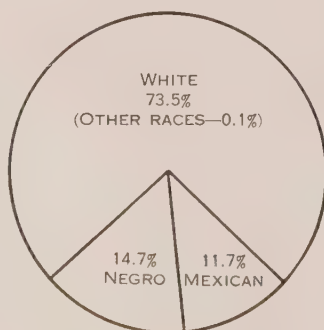
**Termites:** see ENTOMOLOGY.

**Territorial Army.** The territorial army of Great Britain is composed of civilians who volunteer for military training on a four years' engagement with the option of extending it. The normal age-limits are between 18 and 38, but youths of 17 may enlist with the consent of their parents while it has been recently decided that men up to 50 can be taken for home defence in the anti-aircraft units. With the latter exception the members of the territorial army now engage for general service if the force is embodied in time of national emergency, whereas before the war they only undertook an obligation for home defence. The units are administered by county associations, but their training is organized, under the direction of the war office, by the military commands of the areas in which they are situated. The training comprises an annual camp of 15 days' duration and, during the rest of the year, a minimum of 40 obligatory drills in the first year and 20 in subsequent years. Men who cannot manage to attend for the full duration of the camp may come for eight days on condition that they do ten extra drills (a drill is the name given to a period of one hour's instruction at the unit's drill-hall, or headquarters). A bounty of £3 is paid to all who perform these obligations, with an additional shilling for each drill up to 30, beyond the minimum number. At the end of 1937 the strength was just over 160,000 while the establishment had been raised to 200,000—largely to meet the increased needs of anti-aircraft defence.

Since Mr. Hore-Belisha became secretary of State for war in the summer of 1937, a series of measures has been introduced to enhance the status of the territorial army. (See also ARMIES OF THE WORLD.) (B. H. L. H.)

**Texas,** south-central State of the United States and successively a province of New Spain and of Mexico, became an independent republic in 1836 and was admitted to the United States in Dec. 1845. Because its flag under the Republic bore a single star and is still used as the State flag, it is known as "The Lone Star State." Area, 265,896 sq.mi. (largest in the Union); population (U.S. census, 1930) 5,824,715; (estimated, July 1, 1937) 6,172,000. Capital, Austin, estimated population, Aug. 15, 1937, 73,000. The three largest cities, with population estimated Jan. 1, 1937, are: Houston, 366,500, Dallas, 330,000, San Antonio, 301,500. Of the State's population in 1930, 2,389,348, or 41%, were urban; 4,283,491 whites (89,396 foreign born); 854,964 coloured; 686,260 other races (683,681 Mexicans).

**History.**—There were no regular State elections in 1937. Among the chief State officials were: James V. Allred, governor; William McGraw, attorney general; George H. Sheppard, comptroller; Charlie Lockhart, treasurer; Edward



TEXAS: Composition of population

## TERMITES—TEXAS

Clark, secretary of State; Claude D. Teer, chairman board of control; L. A. Woods, superintendent public instruction. The State legislature (Senate, 31 members, the House, 150 members) was in regular session Jan. 12 to May 22, with called sessions convening in May and September. In politics the State is strongly Democratic, but Texas Democrats are divided into liberal and conservative wings. During the legislative sessions there was a sharp contest between the liberals, controlling the House and led by the governor, who demanded higher taxes upon the corporations exploiting the State's mineral resources, and the conservative Senate which preferred a general sales tax. A deadlock resulted and led to some agitation for a one-house legislature. Enlarged appropriations without new taxes increased the deficit in the "general fund" to approximately \$17,000,000; but other funds had surpluses which aggregated about the same amount. Among



JAMES V. ALLRED, governor of Texas

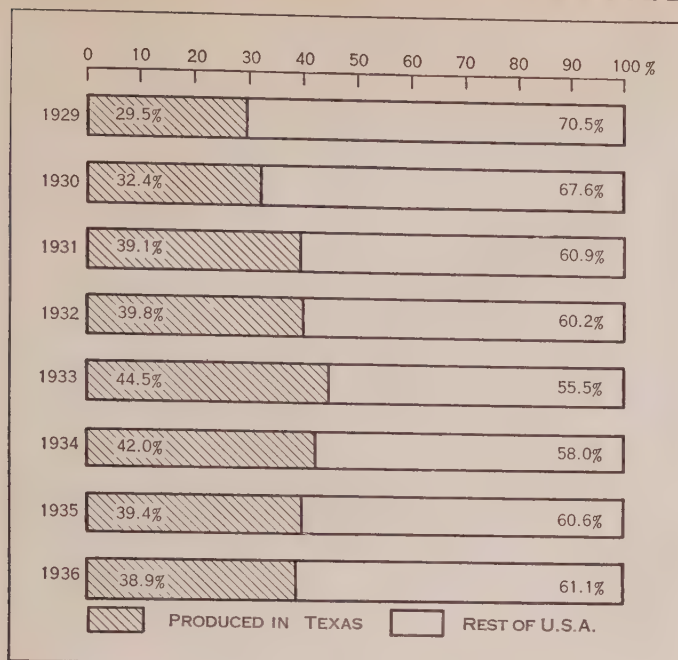
important laws enacted were: giving all cities power to regulate public utilities therein and reducing the legal rate of return on utility investments from 10% to 8%; permitting the commitment of insane without a court trial; setting up a teachers' retirement system, but failing to provide the State's share in financing the system; and repeal of the law permitting betting at race tracks. A constitutional amendment increasing the salaries of State officials, adopted in 1936, went into effect in January; also one providing pensions for indigent persons above 65 years of age.

**Education.**—The public schools, with an enrolment of 1,566,544 children from six to 17 years of age, were supported from both State and local funds. The State's share for 1937-38 was \$39,963,968; the amount from local taxes about \$27,000,000. Of 16 State-supported institutions of higher learning, including one for coloured youths, the largest, the University of Texas at Austin, has about 10,000 students. The biennial appropriations for these institutions for 1937-39 totalled \$14,363,750, exclusive of extension work. In addition to the State colleges there are some 20 denominational and privately endowed senior colleges. There are 209 four-year accredited public high schools.

**Charities and Correction.**—The State maintains ten hospitals and sanatoriums for mental and nervous cases, tuberculosis victims and crippled children; schools for the blind and deaf, both white and coloured; and for delinquent and defective children; two orphans' homes for white and one for coloured; two homes for Confederate veterans and widows of veterans; and a State prison system with extensive farms and shops. Housing facilities at many of the eleemosynary institutions having become inadequate, the legislature in 1937 provided funds for many new buildings. By popular vote a constitutional amendment was adopted, Aug. 23, 1937, authorizing an annual appropriation in aid of the adult blind and dependent children; but the appropriation was not made.

**Banking and Finance.**—Reports of 456 national banks in





PERCENTAGE OF UNITED STATES OUTPUT OF CRUDE PETROLEUM produced in Texas (left end of each bar)

Texas, June 30, 1936, showed a total capital stock of \$81,562,000; deposits, \$1,054,284,000; loans and discounts, \$315,901,000; total assets, \$1,192,845,000. Totals for 1937 are not yet available, but reports of many individual banks indicate a marked increase in all totals. Reports of 417 State banks, June 30, 1937, present the following totals: capital stock, \$17,304,400; deposits, \$154,498,588; loans and discounts, \$63,351,617; total resources, \$206,991,742. For the fiscal year ending Aug. 31, 1937, State revenue receipts were \$154,121,030 and purely government expenditures, \$144,770,274. The tax rate was \$.49 per \$1,000 on a property valuation that had increased from \$3,247,532,305 in 1936 to \$3,323,880,271.

**Agriculture, Minerals and Manufactures.**—At the close of 1937 Texas ranked second among the States in total cash farm income with \$544,176,000 (crop sales \$317,600,000; livestock \$188,350,000; government benefit payments \$38,266,000), an increase of \$82,821,000 over 1936. The total farm income, including products consumed on farms, was much larger, that from crops alone being \$460,983,000. The increase resulted from larger crop yields which more than compensated for lower average prices. The largest single item was cotton, estimated at 5,230,000 bales valued at \$214,430,000; but cottonseed brought \$46,580,000; corn was valued at \$47,552,000; wheat at \$41,690,000; grain sorghums at \$29,308,000; rice at \$8,942,000; truck crops at \$15,967,000, and fruits and nuts at \$15,239,000. Of the total received from livestock about \$48,000,000 came from sales of wool, mohair, and lambs. Especially important was the fact that virtually all parts of the State participated in the increased income and that the panhandle-plains region, formerly plagued by droughts and dust-storms, received some \$85,000,000 from wheat and cotton alone.

The mineral production, chiefly oil, natural gas, and sulphur, was valued at \$787,500,000, an increase of 25% over that for 1936. Texas produces about 40% of the petroleum of the United States and about 75% of the sulphur. The number of producing oil wells rose from 66,000 to 78,000 while 264 new gas wells were brought in.

Complete statistics on the value of manufactured products for 1937 are not yet available, but indexes indicate a total of near \$1,400,000,000, compared with \$1,072,566,428 in 1935. Leading

industries were meat-packing, flour-milling, canning, baking and large scale industries centring about petroleum refining, the manufacture of carbon black from natural gas, cottonseed oil refining and new chemical industries. By far the largest processing industry was oil refining.

Despite the recent general business recession in other parts of the country, business activity in Texas as measured by retail sales and wages paid, was 7% above that of the corresponding period of 1936 and 23% above that for 1935. (C. W. RL.)

**Texas, University of.** President H. Y. Benedict died suddenly on May 10, 1937, at the age of sixty-seven and in the tenth year of his administration. J. W. Calhoun, professor of applied mathematics and comptroller, was appointed president, ad interim, May 30, 1937. The \$2,000,000 Library Extension-Administration building (PWA Project No. 2257) was completed and occupied during the summer. Provision for the University of Texas made by the Forty-fifth Legislature (January-May 1937) provided for (a) partial salary restoration, (b) about forty new positions, (c) a college of fine arts. The enrolment at the main university during the first semester of the long session 1937-38 is 9,380 as compared to 8,488 at the same time a year ago. The full-time teaching faculty of the university, including full-time instructors, is 531 at the main university and 62 at the medical branch. This does not account for administrative officials numbering about 32 people. The entire university staff, including employees of all kinds, numbers 1,295. During the year 1937 (June and August) there were conferred: bachelor degrees of various kinds, 1,292; master's degrees, 288; doctor of philosophy degrees, 32; doctors of medicine, 79. At the medical school at Galveston a hospital for negroes and one for crippled children have been built and equipped at a cost of \$500,000.

(J. W. CA.)

**Textile Industry.** Market prospects turned sharply downwards early in September and continued weak to the end of 1937. Business recession in the United States combined with the Sino-Japanese War and international political unsettlement to reduce commodity prices substantially, destroyed business confidence, and checked demand. On the side of supply, a record crop of American cotton of 18,746,000 bales (of 500lbs.) with carry-over of 6,000,000 bales and a world crop of 51,400,000 bales against a world consumption not expected to reach 31,000,000 bales brought prices at times below 8 cents a pound middling at New York as against 12-13 cents a year before. Acute shortage of wool towards the end of the previous buying season forced prices of all grades to high levels (64s warp tops Bradford 40d. a pound) in January, particularly crossbreds. With a negligible increase of the world clip of about 1%, but reduced demand, new clip prices broke in September-October (64s warp tops 28d.) but recovered (to 31d.) later. A large jute crop of 8,617,000 bales, produced in spite of acreage restriction efforts by the Bengal Government, was offset by abandonment of long-standing restriction of production by the Indian Jute Mills Association in face of competition of new "outside" mills, together with good demand based on prosperity of 1936-37 and large world crops. Jute prices remained firm throughout the year, and industries active, though Dundee made many complaints to the Government against severe and growing competition from Calcutta mills. Flax prices tended upwards throughout the year under the control of the U.S.S.R. monopoly, but mill activity declined towards the end of the year. Hemps have maintained the general level of prices, Italy having almost ceased to supply abroad. The Kenya and Tanganyika sisal crops gave those territories a record return. Spinning, manufacturing, finishing, hosiery, came under the same influences, particu-



larly the weak or uncertain raw material markets. The United Kingdom maintained a strong home market but, as stated, demand declined in the United States.

The British cotton industry is seeking comprehensive statutory powers of compulsion for reorganization. The United States textiles industries have so far largely maintained the "New Deal" working conditions of production and wages. The Australian, New Zealand, and South African Governments have passed Acts for a levy of 6d. per bale for wool publicity and wool research, and an International Wool Secretariat has been formed.

**Fibres.**—Outstanding technically is the further rise in world production of rayon staple fibre, likely to be of the order of 540 million lbs. against 299 millions in 1936. Italy, Germany, and Japan are the leading producers, there being political pressure to become more self-sufficient. The United States output is about 17 million lbs. and the United Kingdom, 29 million pounds. The costs and price have been reduced, Courtaulds "Fibro," 1.5in. staple 1.5 denier, being 10d. a pound against 11d.

The world production of rayon (excluding staple fibre) is expected to have reached about 1,200 million lbs. against 998 million lbs. in 1936, Japan having now exceeded the United States figure of about 320 million pounds. The United Kingdom production was about 120 million lbs. in 1937. Attention continues to be given to refinements of properties. Artificial fibres are being diversified, and "artificial wools" have appeared. The lanital filament or fibre of the Italian concern Snia Viscosa is of casein from skim milk.

Production is estimated at 1,541,000 kilograms, but little or no interest is apparent elsewhere. Germany has provided lanusa, artilana, vistra XT, cuprama staple fibre, and there are many others having crimp, loftiness, dyeing, moisture, or resilience properties imitating wool, but in no case felting. (See also CHEMISTRY, APPLIED; COTTON; LINEN AND FLAX; RAYON; WOOL.)

(H. C. BA.)

**Theatre.** The three major points of interest concerning the American theatre in 1937 were: the renewed evidences of financial prosperity after six years of box-office lassitude, the sudden re-birth of the theatre in the cities outside of New York, and the large remigration from Hollywood of playwrights and actors. The more noteworthy particularized events were the award of the New York Drama Critics' Circle's prize for the best native new play to Maxwell Anderson's commendable blank verse fantasy, *High Tor*, with Paul Green's equally commendable war fantasy, *Johnny Johnson*, and Robert Turney's even more commendable classic Greek paraphrase, *Daughters of Atreus*, voted the runners-up; the award of the Pulitzer prize to Moss Hart's and George S. Kaufman's tenderly humorous but critically negligible comedy, *You Can't Take It With You*; the Dramatists' Guild's bestowal of the Roi Cooper Megrue prize upon Arthur Kober's amiable, if minor, comedy, *Having Wonderful Time*; the outstanding critical and popular success of the English actor Maurice Evans' *King Richard II*; the hubbub caused by George S. Kaufman's, Moss Hart's and Lorenz Hart's lampooning by name in *I'd Rather Be Right* of the officials of the current national government; and the Federal Theatre Project's mild extenuation of and apology for itself in the production of *Dr. Faustus* and the series of news sketches dramatized by Arthur Arent under the title of *Power*, together with the obtrusive incompetence of almost everything else it essayed.

Chief among the year's more unusual theatrical items were the production of four plays by Maxwell Anderson, the simultaneous presentation by eighteen different units of the Federal Theatre Project of the dramatization of Sinclair Lewis' novel *It Can't Happen Here*; the long delayed emergence of the spectacular and



SCENE from the Pulitzer Prize play, *You Can't Take It With You*, by Moss Hart and George S. Kaufman

costly Max Reinhardt-Norman Bel Geddes white elephant, *The Eternal Road*; the increased failure of the once estimable Theatre Guild to live up to its earlier established standards; the enormously augmented audiences on what is known as the road and the great success of the better productions, all clearly indicating the transference to the stage of the considerable antecedent affection for the motion picture; and the numerous productions of the plays of Shakespeare, most of them ill-considered and self-defeated. Aside from the Evans presentation already referred to, only the *Julius Caesar* of the newly founded Mercury theatre had points critically endorsable, and even several of these were open to debate. The *Hamlet* of John Gielgud, ecstatically assimilated by feminine audiences and the more emotional critics, left everything to be desired by sober students of the tragedy, as did the *Hamlet* of Leslie Howard which followed it. The *Othello* of Walter Huston died of spontaneous inanition; the *Cleopatra* of Tallulah Bankhead was unanimously provided with a critical and public asp; and the *As You Like It* of the Surry Players, like the two former exhibits a quick failure, was swallowed up in its own amateurishness.

**The Popular Successes.**—The question of quality not figuring the one way or the other, the biggest popular successes of the year were the Hart-Kaufman *You Can't Take It With You* and *I'd Rather Be Right*, Clare Boothe's derisory comedy of the genus female, *The Women*, S. N. Behrman's adaptation of Jean Giraudoux's saucy paraphrase of the Jupiter legend, *Amphitryon 38*, acted by the Lunts, the already noted Evans' *King Richard II*, Robert Sherwood's adaptation of Jacques Deval's comedy of Russian nobles in exile, *Tovarich*, Mark Reed's comedy of morals, *Yes, My Darling Daughter*, the Murray-Boretz theatrical farce, *Room Service*, Rachel Crothers' comedy of a flutter-minded woman caught in the fancies of Buchmanism, acted by Gertrude Lawrence and called *Susan and God*, Kober's *Having Wonderful Time*, and the Monks-Finklehoffe comedy of undergraduate life at the Virginia Military Institute, *Brother Rat*.

Among the year's phenomena were the continuance of the run of *Tobacco Road*, which opened on December 4, 1933 and which is within hailing distance of equaling and possibly even exceeding the record run of 2,532 performances established by the memorable *Abie's Irish Rose*; the astonishing success in various cities outside of New York of the ancient melodrama, *The Drunkard*,



# THEATRE

which, for a single example, on June 30 entered the fifth year of its engagement in Los Angeles; the unprecedented road success of Helen Hayes in *Victoria Regina*, its box-office returns breaking record after record; the demonstrated distaste of the American public for the psychopathic drama favoured by the English public and the failure of every such imported exhibit; and the concerted effort, at length, of the various managerial and acting organizations to attempt to rid the theatre of some of the barriers that have been standing in the way of its health and greater prosperity. (See also *FEDERAL THEATRE*.) (G. J. N.)

**Great Britain.**—The chief playwright of 1937 in the English theatre was Mr. J. B. Priestley, who, in the autumn of the year, had three new plays running simultaneously in the West End of London. Before the War, Mr. Somerset Maugham was turning out his fashionable light comedies, as richly stuffed with epigrams as a cake with currants. Epigrams, easily made by the practised hand, are no longer in fashion. Mr. Priestley substitutes philosophy for aphorism, and does not fail to attract the modern audience by this severer course.

His three plays, *Time and the Conways*, *I Have Been Here Before*, and *People at Sea*, arrived in that order, both in time and in merit. The first two linked, in terms of vivid, theatrical effect, a philosophy of Time with the lives of people oppressed by circumstance. The idea was to give ground for hope by stressing the fact that Time's seemingly remorseless action may be less real than we think. Mr. Priestley's notions, having much in common with those of such thinkers as Ouspenski and Dunne, need not be challenged here as philosophy: considered as sources of drama, they proved fruitful indeed, yielded two of the best plays of the year, and evoked some of the best acting. Especially notable was Mr. Wilfred Lawson's powerful and poignant performance in *I Have Been Here Before*.

Mr. St. John Ervine returned to the office of dramatist with *Robert's Wife*, which might be called a "problem" play, had not that title tended to disappear. The piece raised issues of social policy in a brusque, challenging way. Our attitudes to peace and war, and more especially to the equality of the sexes when professional interests clash, were matters under vigorous discussion. Miss Edith Evans and Mr. Owen Nares were in excellent form as chief parties to the argument.

A year which took from us Sir James Barrie (*q.v.*) inflicted a severe loss on the stage. It was a pity that Barrie's life, with its many successes, should have ended with a failure. The public did not long support *The Boy David*, the Biblical piece which he



At right, standing, GEORGE M. COHAN, as the president, addresses a meeting of his cabinet in *I'd Rather Be Right*, which lampoons the U.S. National Administration

had written for Miss Elisabeth Bergner. That actress gave a lovely performance of the Jewish leader emerging, still a stripling, from his hungry home. The play was uneven, but had some characteristically charming passages. Probably it would have enjoyed a better run if it had not been so lavishly handled. At a smaller theatre, with a cheaper production and lower running costs, it might have lasted longer.

Another loss was that of Miss Lilian Baylis, the manager of the Old Vic and Sadler's Wells, and a wonderful pioneer of classics for the million. Control of the Old Vic had somewhat passed out of her hands; at least, she was, at the end, entrusting a great deal to Mr. Tyrone Guthrie, a brilliant producer who altered the policy of the Old Vic in some ways and tried to raise its status from that of a good local institution with a respectable resident company to one of international repute. He could command the services of many stars as guest-players, and the greatest were glad to work for him.

Mr. Laurence Olivier's *Hamlet* was perhaps the chief achievement of the year at the Old Vic, and the quality of this production and performance was recognized by the request to repeat them in the courtyard of Elsinore, near Copenhagen. The compliment of this invitation was gladly accepted, and the whole company went out to Denmark to perform *Hamlet's* tragedy on the site of the castle he had known. (The Elsinore castle of today was built long after the original Amleth's day, but was contemporary with Shakespeare's writing of the play.) Despite some unkindly weather, the visit was a great success, and the Danish writers were most cordial in praise of the English troupe. The Danes, being accustomed to rather stiffer and more ceremonial playing of Shakespeare, especially praised the naturalism and fluid, unforced humanity of the English mode of acting.

Mr. Guthrie added to the Old Vic's program by initiating a country festival—at the beginning of September. The chosen town was the Derbyshire Spa of Buxton, and the program though austere, proved very popular, and it is likely that this parallel to the Malvern Festival will continue to be held. The Malvern Festival was not as attractive as usual. Mr. Shaw had nothing new for us, but Sir Cedric Hardwicke appeared therein in a new comedy and gave distinction to the occasion.



A SCENE from the farce, *Room Service*





SONG AND DANCE NUMBER done by chorus girls and members of the Supreme Court in the comedy, *I'd Rather Be Right*

Although Mr. Shaw provided no new play this year, he offered a revised and most Shavian ending of Shakespeare's *Cymbeline*. Shakespeare, who became unusually popular in New York in 1937, was once more much honoured with profitable performance and not as a national hero only. There were splendid audiences all the summer at Stratford, and Mr. Gielgud's production of *Richard II* in London in the autumn was much approved.

Mr. Gielgud's winter program of *Richard II*, *The School for Scandal*, followed by Chekhov's *The Three Sisters*, and *The Merchant of Venice*, showed that private enterprise could render the services which others expect of a National Theatre.

A word should be also said for the splendid season of modern classics given by Mr. Anmer Hall at the Westminster Theatre, culminating in a fine production of Mr. Eugene O'Neill's immense Americo-Hellenic tragedy, *Mourning Becomes Electra*. Here, too, was a worthy substitute for the work of a National Theatre. In this Miss Beatrix Lehmann established once more her claim to be an actress of unusual subtlety and power.

Among the dramatists to succeed in light comedy were Mr. Gerald Savory and Mr. Terence Rattigan, authors of *George and Margaret*, and *French Without Tears*, two successes of the year. Producers to win or confirm their reputes were Mr. Michael Macowan, Mr. Murray Macdonald, and Miss Irene Hentschel. Players who did remarkable work were Mr. Laurence Olivier and Mr. Wilfred Lawson.

(I. Br.)

**Theatre, Federal:** see FEDERAL THEATRE.

**Theosophy.** The American division of the Theosophical Society founded in 1875 by Madame Helena P. Blavatsky and Col. Henry S. Olcott had a membership of 4,351 in 1937. Offices are in Wheaton, Ill. The international Theosophical Society has headquarters at Point Loma, Calif. and there is an independent society of 74 members in New York city.

The Theosophical Society in England has a membership of about 3,500 persons, of whom some 560 are unattached, while 2,940 belong to local lodges and centres. There are 126 lodges and 34 centres grouped into five federations, lodges and federations being self-governing. A Youth Centre is affiliated to the International Federation of Young Theosophists, and meetings are held at the Annie Besant memorial hall, 50 Gloucester Place, Portman Square, London, where are the chief offices for England.

Scotland, Ireland, and Wales each have branches of the society, with groups, lodges, and centres. Within the society in 1937 were 47 national societies or sections in different countries in the world,

## THEATRE, FEDERAL—TIBET

each national society consisting of not fewer than seven lodges. The president of the movement is Dr. George S. Arundale, and its headquarters are at Adyar, Madras, India.

In 1937 an important European convention was held at Copenhagen, and among many international speakers were Dr. Maria Montessori and the Rt. Hon. George Lansbury, M.P. Membership in England in 1937 showed little change from that of the previous year. A legacy of £10,000 was received by the English society.

**Thomson, Elihu** (1853-1937), American electrical engineer and inventor, who had no less than 800 patents issued in his name. During his lifetime he received many awards from scientific institutes and societies in recognition of his contributions to the study of electricity. In addition to his widespread activity in scientific societies, he served as acting president of the Massachusetts Institute of Technology from 1920-22. His death occurred at Swampscott, Mass., March 13, 1937. The reader will find an account of his electrical discoveries and improvements in the *Encyclopædia Britannica*, vol. 22, p. 150.

**Thousand Island Bridge:** see BRIDGES.

**Thwing, Charles Franklin** (1853-1937), president emeritus of Western Reserve University and author on educational subjects, was born at New Sharon, Me., Nov. 9, 1853. After graduating from Harvard and the Andover Theological Seminary, he served as a Congregational minister until offered the presidency of Western Reserve College in 1890. He served in this position during important years of development, resigning only in 1921 to devote his entire time to writing. Though a champion of continued study of the classics, he was known as a liberal. In 1924 he helped to inaugurate the "floating university" which offered courses to students who lived on a liner and toured the world. In the same year, he sponsored resolutions asking political party condemnation of the Ku Klux Klan. He was author of nearly fifty books as well as innumerable articles for newspapers and magazines. He was secretary of the board of trustees of the Carnegie Foundation for the Advancement of Teaching from 1905 to 1921 and in 1922 was president of Phi Beta Kappa of which he became a life senator in 1931. He died in Cleveland, Aug. 29, 1937.

**Tibet**, a country of central Asia, lying N. and N.E. of the Himalayas, mainly a high tableland. Nominally a Chinese dependency, it is in practice independent, under the rule of the Dalai Lama, an incarnation of a Bodhisattva who, on his death, is reborn in a new body which is in due course recognized as that of the new Dalai Lama. The area of Tibet is about 450,000 sq.mi.; estimates of the population vary between 750,000 and 6,000,000; 2,000,000 is probably somewhere near the truth. The capital is Lhasa (pop. perhaps 50,000). The national religion is Lamaism, a development of Mahayana Buddhism. Education is carried on by the many monasteries.

The last Dalai Lama died in 1933, and government has since been in the hands of the Anchin Lama, third in rank in the ecclesiastical hierarchy. On several occasions, last in mid-1937, claims that a new Dalai Lama had been discovered have been made; but so far final recognition does not appear to have been accorded to any of those put forward.

After the Dalai Lama's death, an invitation was extended to the Tashi Lama, second in importance of the priest-rulers, to return to the country from China, where he had been welcomed by the Chinese, who hoped with his aid to re-establish their former influence in Tibet. As, however, he was accompanied by



a detachment of Chinese troops, he was induced to halt in eastern Tibet outside the area ruled from Lhasa, where, in June 1937, the Anchin Lama met him at Hsinking. In November, the Tashi Lama was forbidden to enter Tibet proper until he had performed "10 virtuous deeds," and on Nov. 30 he died, in exile, in China.

Agriculture is not of first importance in Tibet, but some fruit and cereals are grown; sheep and yaks are pastured. The country has become recently the scene of a new interest—the search for the giant panda, a delicate creature indigenous only in this country. Gold and salt are found and worked; manufactures are restricted to articles for local consumption. There are no railways or regular air communications, and roads are primitive. Trade is almost entirely with India and China. There is a Tibetan paper currency, but Indian and Chinese coins are also in use.

**Timber:** see LUMBER.

**Timor Archipelago** consists of Timor, largest of the Lesser Sunda islands, and neighbouring islands roughly midway between Celebes (to the north) and Australia (to the south). Western Timor (5,400 sq.mi.—24,500 sq.mi. with the neighbouring islands) is a Dutch possession; Eastern Timor (7,300 sq.mi.), Portuguese. The population of Dutch Timor (1930) is 1,657,000; of Portuguese Timor, c. 475,000. Coffee, copra, and sandalwood are produced and exported. The islands have become important by virtue of their position on the Europe-Australia air route.

**Tin.** World tin production suffered a depression drop of 53%, from 193,000 long tons in 1929 to 90,000 tons in 1933, with a recovery to 180,000 tons in 1936 against 136,000 tons in 1935. The accompanying table gives the details of output for the leading producers, accounting for 85% of the total.

World Production of Tin  
(Long tons)

	1929	1933	1934	1935	1936
Bolivia . . . . .	43,300	14,700	22,800	25,000	24,100
China . . . . .	6,800	9,500	6,300	9,000	11,300
Dutch E. Indies . .	35,200	12,600	19,400	20,100	31,500
Malaya . . . . .	69,400	24,900	38,200	42,300	66,700
Nigeria . . . . .	10,700	3,800	5,000	6,600	9,500
Siam . . . . .	10,500	10,300	10,200	9,800	12,600
World total . . .	193,000	90,000	121,000	136,000	180,000

While the 1936 total is still 7% below the 1929 high, several of the countries have reached outputs well above their former level; in addition to China and Siam, as shown in the table, other smaller producers not listed in the table that have increased over 1929 are Australia, Belgian Congo, Indo-China, Japan, and Portugal; in most cases these increases are small, but with Belgian Congo and China they are fairly large. The reason why so many countries have surpassed their 1929 output, while the 1936 total is still low, is found in the heavy decrease in Bolivia, which stands at only 56% of the 1929 output.

The United States has no appreciable tin production, but imports about 45% of the world supply for domestic consumption, and in addition supplements the imports with secondary tin, recovered from previous use, to the extent of more than one-third the amount of new metal used. A study of 1936 consumption showed 40% used in tin- and terne-plate; 40% in alloys; 9% in foil, tubes and pipe; 6% in tin compounds; 4% in tinning and galvanizing; and 1% in other uses.

A new technical development is tin-plate on which the tin coating is electro-deposited, with marked reduction in porosity of the coating as compared with hot-dipped plate. (See also COLUMBIUM; METALLURGY.)

(G. A. Ro.)

**Titanium.** Both ilmenite and rutile are utilized as sources of titanium, although the former furnished most of the supply; rutile is probably mined not to exceed 1,000 tons a year, while the figure for ilmenite has grown to something like 200,000 tons. India and Norway are the chief producers, with small amounts from Senegal, Canada, Portugal, Brazil, and Egypt. Although some titanium is used as an alloying agent in steel, the great expansion in demand that has come during the past few years resulted from the development of titanium pigments for paint and ceramic work.

(G. A. Ro.)

**Tobacco.** Consumption of tobacco throughout the world continued to increase during 1937 despite wars which closed half the tobacco factories in China and stopped the customary exports of American tobacco to Spain. The world's leading importer of tobacco, the United Kingdom, retained for home consumption a record supply of tobacco imports, 183,400,000lbs., compared to 175,000,000lbs. in 1936, the previous high. The world's leading exporter of tobacco, the United States, produced 1,505,762,000lbs., which is 30% more than the 1936 crop of 1,154,131,000lbs., the U.S. Department of Agriculture estimated. Ontario, the principal tobacco-growing province of Canada, planted the largest crop in its history, 57,100ac., a 24% increase over the 1936 acreage. Production in Canada in 1937 was 71,352,000lbs., compared to 46,084,000lbs. in 1936, as estimated by the Ministry of Trade and Commerce. Production of tobacco in other countries in 1937 and 1936 was given by the International Institute of Agriculture as follows, the figures in parentheses being for 1936:

Japan, 142,750,000lbs. (142,353,000). Greece, 140,624,000lbs. (178,506,000). Turkey, 138,892,000lbs. (99,208,000). Italy, 94,799,000lbs. (96,783,000). Bulgaria, 69,055,000lbs. (93,098,000). Hungary, 45,751,000lbs. (50,377,000). Southern Rhodesia, 18,560,000lbs. (18,200,000). French Equatorial Africa, 4,400,000lbs. (3,000,000). Estimates of the Chinese crop are around 220,000,000 pounds. No figures for Russia are available. The U.S.S.R. crop in 1936 was estimated at 608,478,000lbs., compared to a five-year (1931-35) average of 354,728,000 pounds.

The 1937 production was marked by a heavy increase in acreage planted to flue-cured tobacco, the type popular for cigarettes, reflecting the continuing larger use of cigarettes both in Europe and America. In the United States the consumption of cigarettes has increased by about 10% each year since 1932, and the consumption of cigars about 6% each year since 1933, the U.S. Department of Agriculture estimates. The flue-cured tobacco crop in the United States was the second largest on record, 850,230,000lbs., or 25% larger than the 1936 crop of 682,850,000 pounds. The record crop of this type of tobacco was 865,171,000lbs. in 1930. In Canada the increased acreage in flue-cured tobacco was about 37%, while 23% less of burley was planted and the dark tobacco acreage was also reduced. In Japan, China, Manchoukuo and Chosen governments are encouraging the growing of flue-cured tobaccos over other types.

Much of the increase of tobacco in the tobacco-growing countries of the British Empire is attributable to the imperial preference tariff on tobacco imported into the United Kingdom. Since 1919, when 60 years of non-preferential rates and free trade were suspended, imports from Empire tobacco countries to the United Kingdom have increased progressively almost every year, and the acreage in Canada, Southern Rhodesia, India and Nyasaland has likewise increased. The United Kingdom's import duty on leaf tobacco from the United States and other foreign countries is the equivalent of \$2.35 to \$2.61 a pound. The duty on Empire leaf is 51¢ a pound less. Of the tobacco supply the United Kingdom annually retains for home consumption only 1.01% was



imported from Empire countries in 1919. In 1937, when the amount of tobacco retained in the United Kingdom was the record supply of 183,400,000lbs., 23.6%, or 43,280,000lbs., were imported from countries of the Empire.

Tobacco exports from Cuba for the period of January 1 to September 30 in 1937 and in 1936 are given by the Cuban government as follows, figures in parentheses being for 1936: Leaf tobacco, 9,305,264 kilograms (7,906,306); cigars, 27,393,102 in number (33,482,252); cigarettes, 17,164,211 (17,678,494); pipe tobacco, 14,609,000 kilograms (34,800,000).

For fuller discussion of British preferential tariffs see "British Imperial Preference in Relation to United States Leaf Tobacco Exports" in *Foreign Agriculture*, vol. 1, No. 11, November 1937, published by the U.S. Department of Agriculture. (See also CIGARS AND CIGARETTES.) (S. O. R.)

**Togoland.** This former German colony on the Gulf of Guinea, West Africa, bounded E. by Dahomey and W. by the Gold Coast, is mandated partly to Great Britain and partly to France.

The British mandate marches with the Gold Coast with which it is administered. Area, 13,040 sq.mi.; pop. (1931), 293,670.

The French mandate ("Togo") is the eastern and larger portion, as well as the more valuable. Area, 20,070 sq.mi.; pop. 751,000; capital, Lome (13,340). Imports and exports for 1935 were valued at frs. 31,200,000 and frs. 34,700,000 respectively. The chief products are cocoa, palm kernels and oil, cotton, and copra. There are 206mi. of railway and 2,158mi. of roads.

**Tokyo,** capital of Japan, population (1936) 6,085,800; area 257 sq.mi., situated in 35° 41' N. and 139° 45' E. at the head of the bay of the same name on the south-east coast of Honshu, the main island of Japan. Tokyo is first mentioned in history under the name of Yedo in 1192. For 268 years it was the centre of administration as the headquarters of the Tokugawa Shogunate, although the imperial court remained in Kyoto. In 1869, after the shogunate had given way to the empire, the Emperor Meiji transferred the capital to Yedo, which he renamed Tokyo, or eastern capital. Tokyo suffered (1923) one of the greatest catastrophes of history when an earthquake, accompanied by tidal waves and followed by devastating fires, led to the death and injury of almost 100,000 persons in Tokyo, the neighbouring large port of Yokohama and adjacent towns and villages. Tokyo was approximately half destroyed, Yokohama almost entirely destroyed. Both cities have been rebuilt along much more modern lines. Many large new steel, concrete and brick buildings have been erected in the central business sections of the city, although the old traditional character of the city is preserved in many narrow winding lanes, lined with tiny Japanese houses and shops.

Tokyo took its place among the most populous capitals of the world when it was greatly enlarged by the amalgamation of a large suburban area with the city in Oct. 1932. Twenty new wards were added to the original 15. Tokyo is served by an extensive system of tramcars, buses and city railways. A subway is under construction and the part which has already been completed serves a section of the central districts of the city. It is a self-governing municipality, governed by an elected common council and board of aldermen. A good deal of executive authority is vested in the mayor, who is elected by the common council. As the capital of the empire, Tokyo is the place of residence of a large number of Government officials and civil servants. It is also Japan's largest educational centre, the Kanda Ward being largely a students' quarter. As of March 1, 1935, Tokyo had 22 universities, with 46,625 students and 72 professional schools, with 52,165 students. Tokyo and its environs rank as one of Japan's four

great industrial regions, the others being Osaka, Nagoya and North Kyushu. On Oct. 10, 1936, there were 975 factories employing more than 15 operatives. The number of workers in these factories was 170,830. Features of Tokyo are the many hills on which the city is built and the absence of a regular numbering system for the houses. The city has been selected as the site of the Olympic Games in 1940. (W. H. CH.)

**Tomatoes.** The U.S. tomato crop marketed in 1937 sold for \$27,430,000 for 21,350,000bu. from 198,500ac., the U.S. Department of Agriculture estimates. This compares with \$27,063,000 received for 20,728,000bu. in 1936. The average annual income for the crop (1928-32) was \$25,070,000 for an average production of 17,263,000bu. a year. Yield per acre was 108bu. in 1937 and 113 in 1936, as against a five-year average of 119. Production by States in 1937 was as follows: California, 3,281,000bu.; Texas, 2,844,000bu.; Florida, 2,746,000bu.; New Jersey, 2,100,000bu.; New York, 1,872,000bu.; Mississippi, 912,000bu.; Maryland, 832,000bu.; Tennessee, 770,000bu.; Indiana, 660,000bu.; Colorado, 636,000bu.; Virginia, 608,000bu.; Missouri, 556,000bu.; South Carolina, 488,000bu.; Michigan, 476,000bu.; Pennsylvania, 380,000bu.; Ohio, 373,000bu.; Oregon, 294,000bu.; Kentucky, 276,000bu.; Arkansas, 240,000bu.; Louisiana, 228,000bu.; Washington, 216,000bu.; Georgia, 180,000 bushels. Production in each of the remaining States was under 100,000 bushels. (S. O. R.)

**Tonga Protectorate:** see PACIFIC ISLANDS, BRITISH.  
**Tongking:** see FRENCH INDO-CHINA.

**Tonks, Henry,** F.R.C.S., British artist; born at Solihull, Warwickshire in 1862. Trained in medicine, he abandoned this for an artistic career, and eventually became assistant professor at the Slade school. From 1917 to 1930 he was Slade professor of Fine Arts in the University of London. Tonks exhibited regularly with the New English art club, and his work is to be seen at the Tate gallery, and at Manchester, Melbourne, Capetown, and the Luxemburg. He died at Chelsea, Jan. 8, 1937.

**Toronto,** with a population of 648,309 (1937) and an area of 34 sq.mi. is the second largest city of Canada and capital of the Province of Ontario. Its 2,627 manufacturing establishments produce annually goods to the value of \$360,000,000. Conveniently situated on the line dividing the population of Canada as between East and West, Toronto has become an important centre of distribution of goods to the Province of Ontario, the most populous of the Canadian provinces, and to the rest of the Dominion. In bank clearings, customs revenue and postal revenue, it leads all other cities in the Dominion. There are ten collegiate institutes, four technical schools, four high schools of commerce and 160 public schools besides 39 separate schools and a large number of private educational establishments. The University of Toronto with 7,263 students is said to be the largest university in the British Empire.

The Corporation of the City of Toronto owns the street railway and motor bus transportation, the waterworks system and the local hydro-electric system which has exclusive distribution of electricity for light, heat and power. There are 106 parks and playgrounds with a total area of 2,243 acres. Toronto's imposing harbour is in the hands of a public commission. The Canadian National Exhibition, now in its 60th year, is a great annual fair attracting 1,500,000 visitors. The well-known Royal Winter Fair with its agricultural, live stock and horse show is also held annually. (G. R. G.)



**Totalitarian State,** the name given in recent times to those States having a highly centralized form of government under the control either of a personal dictator who, or of a political group which, refuses recognition of other political parties and denies them any representation or voice in the government.

The leading examples are Fascist Italy and Nazi Germany, though many other countries—including the Free State of Danzig, Poland, Rumania, Estonia, Greece, insurgent Spain, Japan (and in fact if not in name, the U.S.S.R.) in the Old World, and Brazil, Uruguay, and Peru in the New—have either succumbed to or are imbued with the doctrine of "totalitarianism." This is in part derived from Hegel's conception of the Nation-State, from the theory of the State as the supreme expression of all forms of national life to which none of its activities is extraneous; and it may be summed up in Mussolini's formula, "All within the State, nothing outside the State, nothing against the State." General Franco told much the same story in the program that he took over from the Falangists in April 1937, when he proclaimed that the State he was hoping to form in Spain would be a totalitarian instrument in the service of national integrity. The system of political parties with all that flows from them, representation by conflicting parties, and parliament or congress of the well-known type, would, he said, be implacably abolished, and a rigorous discipline would prevent any attempt to poison or disunite Spaniards.

The fallacy underlying the theory of totalitarianism would seem to reside in the fact that a State could be conducted in conformity with its principles only in a world of its own: if "all" is to be "within the State" and "nothing outside the State," the very existence, much less the rights, of other States can receive no recognition. (See also GERMANY: *History*; WARFARE.)

(L. H. D.)

**Touring and Tourist Camps.** The introduction of the modern house trailer has given a decided impetus in the United States to the increase and improvements of camp sites for tourists wherever scenic attractions call. Florida, California, Denver and other parts of Colorado, Niagara Falls, the White mountains of New Hampshire, the Shenandoah valley in Virginia and most all of the National parks of the West, have desirable camp sites for trailers.

Those who wish to travel light and do not care for the more formal hotels can find desirable temporary quarters in the many cabin camp sites. The cabin is a temporary home. Usually there are eating places near by or anyone who wishes may cook his own meals in the cabins. Most States now require that all trailer and cabin camp sites shall have proper sanitation, pure water supply and proper drainage. Bed linen must be changed for each new occupant. In fact, State laws for the protection of the travelling public are now as stringent as to proper regulation of cabin and trailer sites as they are regarding hotels and inns. Almost all of the National parks provide excellent accommodations, where sanitary conditions are excellent.

There is still a growing need for more and better camp sites and those who operate well regulated camp sites get a good year-round business. The increasing demand by trailer tourists for more facilities has led to improvements, so that a good modern camp site often furnishes electricity, water supply, garbage disposal, laundries, wash rooms and toilet arrangements, all as part of the regular equipment, use of which is included in the modest fee for parking the trailer. Fifty cents per night or \$3.50 per week is the usual charge.

Cabin camps, with all facilities, can be had for one dollar per night per person.

(W. A. K.)

**Town and City Planning.** The year 1937 showed a considerable revival of interest and activity in town and city planning matters. This was concurrent with and probably the result of improved economic conditions. Urban building and territorial expansion afford a necessary stimulus for planning progress. Furthermore, in periods of economic depression available public funds are usually required for the immediate services of the moment, rather than for the planned needs of a future day.

For these reasons, there was a general cessation of town and city planning action beginning about 1930. Not only did many communities drop their appropriations for planning work, but many found it necessary to cease appropriations for public improvements already under way. There were, of course, notable exceptions to this general situation to be found primarily in those countries where planned public works under the direction or stimulus of the central Government were used to symbolize a social philosophy. Typical of these were the communities planned and constructed by the Soviet Republic, and the activities of the U.S. Government in connection with the Tennessee Valley Authority and in connection with certain of its housing projects.

The other exception to the general situation of inactivity was where planning projects, usually under the complete or partial control of central governments, were used as a means of providing work relief. It is probable that both the symbolic and relief type of planning will become a more or less permanent fixture in many countries. Under any circumstances it is probable that local authorities will continue to depend more and more upon guidance, if not upon direct aid from superior Governments. If wisely administered, this practice may have desirable results in more intelligent, uniform and valuable work. The danger to the progress in the art of town and city planning lies here, as in all similar situations, in that development may be handicapped by arbitrary and bureaucratic controls.

While local planning activity has shown some revival in 1937, it is by no means equal to that of the late 1920's nor in many ways is it of the same character. The earlier planning was concerned primarily with the amenities of the community. The "city beautiful" and the "garden city" were concepts which oriented much of the planning thought. The best plans were those to be executed by the artist, the architect, or the landscape architect. They were dealing, even in matters of zoning, primarily with a fitting spacial arrangement of the facilities of urban life, or, in other words, with factors which are primarily static. With this school or city and town planning, the goal was a pleasing and orderly arrangement of the essential elements of urban life. Their labours brought much that is worthwhile in modern cities and their guidance will be required in the future.

The coming of the motor car brought many basic changes in urban life, and with it the necessity for a reorientation of planning thought. Safe and convenient facilities for inter-communication between the parts of cities have always been important in urban life. The motor car has vastly increased their importance. The mobility of the average citizen, especially in American cities, has been multiplied many times. Motor equipment has largely taken over the burden of mass transportation and the carriage of commodities. The number of vehicles demanding the use of the public streets has grown enormously. But over and above this, the character of street use has changed radically. Slow moving horse-drawn traffic has been replaced by rapidly moving motor traffic with all of the attendant hazards.

Thus it is that most of the European cities and all of the larger American cities are confronted with the critical dual problems of traffic congestion and traffic accidents. This situation affords a major challenge to city planners, and in the year 1937, with the



full implications of the situation apparent, there is noted a definite shift in planning emphasis. It may be described as a growing emphasis on the dynamics rather than the statics factor of urban life; upon provision for movement rather than placement. This change need cause no concern to those who are interested primarily in aesthetics, for beauty and efficiency in city planning are by no means incompatible.

The year 1937 also showed a definite change in the approach of those planners who are interested primarily in mobility. Until recent years it had been thought that the problems of traffic congestion and traffic accidents could be solved by a widening and rearrangement of existing streets. It is now generally recognized that this was a false hope, and that new routes especially designed for and adjusted to the requirements of automotive traffic must be constructed. The principles of such construction are already established and are commonly set forth under the title "Limited Ways." A limited way is a route for the exclusive use of automotive traffic, provided with a physical separation of opposed streams of traffic, without direct access to abutting property, with a complete separation of all intersections and with a cross section design eliminating friction from vehicles moving in the same direction.

This type of construction is generally illustrated in the German autobahn system and in numerous pieces of urban construction in the United States. The most outstanding example is the west side elevated highway and its northerly extension along the Hudson river in New York city. Portions of the Outer Drive in Chicago also illustrate these principles. Both the cities of Chicago and San Francisco have developed plans for comprehensive systems of limited way construction.

Both theoretically and in actual practice, this type of construction proves its ability to carry large volumes of urban traffic at relatively high speeds and in almost perfect safety. It is anticipated that these routes in the future will carry express bus as well as general traffic and, therefore, will afford an added solution for the urban transportation problem.

The year 1937 has witnessed the completion of a number of very notable traffic improvements in the United States. Among these are the Triborough bridge, the first tube of Lincoln tunnel under the Hudson river, the Henry Hudson and various other parkways, all in New York city; the outer bridge over the mouth of the Chicago river and certain new portions of the Outer Drive; and in San Francisco the dedication of both the Golden Gate and the San Francisco-Oakland Bay bridges, each the largest of its kind in the world. (See also HOUSING.) (M. McC.)

**Townsend Plan,** initiated during the depression and named after its originator, Dr. Francis E. Townsend of Long Beach, Calif. (born Fairbury, Ill., 1857), provided an old age pension of \$200 a month for all persons arriving at the age of 60 who retire from active employment. According to the terms of the Old Age Revolving Pension, the money had to be spent within the month. The number of pensioners would be approximately 10,500,000 and the annual cost of the plan, on this basis, would work out at \$25,200,000,000, a figure that represents 37% of the national income (\$68,000,000,000) as stated by President Roosevelt in January 1938. According to Dr. Townsend, the pension fund would be financed by a pyramidal tax of 2% on commercial transactions.

But there is nothing in the plan itself to prevent other methods of raising the money required. Amid the economic confusion that followed the closing of banks in 1933, the plan received considerable attention but it was however, subjected in Congress and elsewhere to severe criticism, and by 1937 had dropped out of consideration.

## Track and Field Sports

enjoyed in the United States one of its best years from the standpoint of performances, interest, attendance and numbers engaged. In the National A.A.U. championships, Feb. 27, 1937, three new indoor records were established and seven winners of the previous year successfully defended their titles in a meet which took on an international flavour because of the presence of athletes from Japan, Italy, Hungary and Canada. In the running events Tommy Deckard of the University of Indiana won by racing to a new indoor record for the 3,000-metres steeplechase championship in 8 minutes 48.6 seconds. Norman Bright of the Olympic Club of San Francisco set up another American record when he won the 5,000-metres championship in 14 minutes 45.8 seconds. Two of the stellar performers in the field events were Sam Richardson, of the Achilles Club of Toronto, whose running broad jump of 24 feet 7 $\frac{3}{8}$  inches enabled him to repeat his victory of 1936 and become the only non-American to win a title. In high jumping Edward Burke, of Marquette university, cleared 6 feet 9 $\frac{1}{4}$  inches. During the outdoor National A.A.U. championships, at Marquette University stadium, Milwaukee, July 3, 1937, many of the American athletes at the Olympic Games in Berlin a year previous were turned back by a rush of newcomers. In twenty-one individual titles only one of five Olympic winners attained top honours among the thirty-three competing Olympians; he was John Woodruff, the tall Negro representing the University of Pittsburgh, who showed his heels to a fast field in the 800-metres run, in 1 minute, 50 seconds. Seven other Olympians who had not scored at Berlin came through to victory at Marquette; the performances of the winners of fourteen events were the best ever turned in at a national championship meet, and three of them bettered the existing American records.

To name but a few of the highlights, Jack Weiershauser, Olympic Club, San Francisco, ran 200 metres around a turn in 20.9 seconds, only two-tenths of a second behind Owens' world record; Ray Malott, Olympic Club, raced to victory in the 400-metres event, in 47.1 seconds. Only three other Americans have ever thrown the javelin farther than Bill Reitz, S.C.S.A., who tossed it 224 feet. Jack Patterson, of Rice institute, went over the 400-metres low hurdles in 52.3 seconds.

Among the outstanding track and field achievements in the U.S. in 1937 were: Elroy Robinson, Olympic Club, 880 yards and 800 metres, 1:49.6; Earle Meadows and William Sefton, Southern California, pole vault, 14 feet, 11 inches; Glenn Cunningham, N.Y. Curb Exchange, three-quarters of a mile, 3:00.8, and one and one-half miles, 6:34; Donald Lash, Indiana, two miles (indoors) 8:58; Edward O'Brien, Syracuse university, 500 yards (indoors) 57.6 seconds; George Varoff, Oregon, pole vault (indoors) 14 feet, 4 $\frac{7}{8}$  inches; Edward Burke, Marquette, high jump (indoors) 6 feet, 9 $\frac{1}{4}$  inches; Spec Towns, Georgia, 110-metres and 120-yard high hurdles, 14.1 seconds.

There were forty-one sectional groups of the A.A.U., headed by the Metropolitan, having a total of 1,626 competing organizations in which 50,384 amateur athletes are registered. Other championship events included the junior national and sectional title events, the women's senior track and field championships, the national championships at 15, 20, 25, and 30 kilometres, the marathon and cross-country championships, the national pentathlon championship, the walking championships at 7 miles, 30,000 metres, and 50,000 metres. These events are exclusive of the I.C.A.A.A. track and field championships, indoors and outdoors, the Penn Relays, the Drake Relays, the Pan-American Exposition Games at Dallas, Texas, and the annual Sugar Bowl games at New Orleans, La. Frequent dual track and field meets and triangle meets are held outdoors between the colleges, as well as the annual Prince-





ELROY ROBINSON sets a new, world, half-mile record of 1:49.6 at the second annual World Labor Athletic Festival

ton Track Meet in May which features the headliners in a program of six events. The largest club meets outdoors are the spring and fall games sponsored by the New York Athletic Club at its country home at Travers Island, N. Y.

New records were set up in the I.C.A.A.A. championships by Benjamin Johnson, Columbia, 60-yards dash, 6.3 seconds, and running broad jump, 24 feet,  $\frac{1}{8}$  inch; Edward T. O'Brien, Syracuse, 600 yards, 1 minute, 13.1 seconds; John M. Donovan, Dartmouth, 60-yards high hurdles, 7.5 seconds made in the semi-finals, and won by Donovan in 7.6 seconds; Dimitri N. Zaltz, Boston college, and Daniel Taylor, Columbia, tied for a new championship record in the 16-lb. shot put, 50 feet, 9 $\frac{3}{8}$  inches. The cham-

pionship trophy was won by Columbia with 34 $\frac{5}{14}$  points.

New York's system of track and field training for its public school students probably is unequalled in the world. It is under the direction of the Public Schools Athletic League which organizes championship games for students in its 127 grammar and 34 high schools. In the latter, the times are but a fraction of a second behind college performances; for instance, 50 yards, 6 seconds; 70 yards, 8 seconds; 75 yards, 8.1 seconds; 100 yards, 10.1 seconds, all made indoors.

## World's Best Track and Field Performances of 1937

### 100 Yards

9.6—Robinson, U.S.A.  
9.6—Stoller, U.S.A.  
9.6—Clifford, U.S.A.  
9.6—Collier, U.S.A.  
9.6—Davis, U.S.A.

### 100 Metres

10.4—Walker, U.S.A.  
10.4—Gyenes, Hungary  
10.4—Hornberger, Germany  
10.4—Osendarp, Holland  
10.4—Sweeney, England

### 220 Yards

20.7—Weiershauser, U.S.A.  
20.7—Carter, U.S.A.  
20.7—Mills, U.S.A.  
20.8—Orr, Canada  
20.8—Rodenkirchen, U.S.A.

### 400 Metres and 440 Yards

46.9—Benke, U.S.A.  
47.0—Woodruff, U.S.A.  
47.1—Malott, U.S.A.  
\*47.1—Shore, South Africa  
\*47.1—Young, U.S.A.

### 800 Metres and 880 Yards

1:49.6—Robinson, U.S.A.  
\*1:50.0—Woodruff, U.S.A.  
\*1:50.5—Lanzi, Italy  
\*1:50.7—Borck, U.S.A.  
\*1:50.9—Harbig, Germany

### 1500 Metres

3:50.3—San Romani, U.S.A.  
3:51.0—Wooderson, England  
3:51.2—Beccali, Italy  
3:51.4—Jonsson, Sweden  
3:51.8—Cunningham, U.S.A.

### One Mile

4:06.4—Wooderson, England  
4:07.2—San Romani, U.S.A.  
4:07.2—Lash, U.S.A.  
4:07.4—Cunningham, U.S.A.  
4:08.8—Jonsson, Sweden

### Two Miles

8:56.0—Szabo, Hungary  
8:57.4—Hoeckert, Finland  
9:13.3—Lash, U.S.A.  
9:14.2—Rice, U.S.A.  
9:19.9—Lochner, U.S.A.

### 3,000 Metres

8:15.8—Jonsson, Sweden  
8:17.8—Szabo, Hungary  
8:19.1—Pekuri, Finland  
8:24.5—Maeki, Finland  
8:25.4—Kurki, Finland

### 5,000 Metres

14:28.8—Maeki, Finland  
14:30 —Askola, Finland  
14:31.1—Kurki, Finland  
14:32.4—Salminen, Finland  
14:33.8—Szabo, Hungary

### 10,000 Metres

30:05.5—Salminen, Finland  
30:15.0—Lehtinen, Finland  
30:32.0—Murakoso, Japan  
30:34.2—Askola, Finland  
30:49.3—Tamila, Finland

\*Metres.

### 110-Metres and 120-Yards Hurdles

14.0—Osgood, U.S.A.  
14.1—Towns, U.S.A.  
\*14.2—Staley, U.S.A.  
14.3—Tolmich, U.S.A.  
\*14.3—Sjoestedt, Finland

### 200-Metres and 220-Yards Hurdles

23.2—Weiershauser, U.S.A.  
23.2—Hucker, U.S.A.  
23.3—Vickery, U.S.A.  
\*23.3—Tolmich, U.S.A.  
23.4—Cardwell, U.S.A.

### 400-Metres Hurdles

52.2—Benke, U.S.A.  
52.2—Gonzales, Argentina  
52.3—Patterson, U.S.A.  
53.3—Hoelling, Germany  
53.6—Scheele, Germany

### High Jump

6.10 $\frac{3}{8}$ —Walker, U.S.A.  
6.8 $\frac{3}{8}$ —Albritton, U.S.A.  
6.7 $\frac{1}{2}$ —Johnson, U.S.A.  
6.7 $\frac{1}{2}$ —Kovtoun, U.S.S.R.  
6.7 —Vickery, U.S.A.

### Broad Jump

25.11 —Long, Germany  
25.10 $\frac{1}{4}$ —King, U.S.A.  
25.5 $\frac{1}{2}$ —Robinson, U.S.A.  
25.4 $\frac{3}{8}$ —Brooks, U.S.A.  
25.3 —Nutting, U.S.A.

### Hop, Step and Jump

50.7 $\frac{7}{8}$ —Togami, Japan  
50.2 —Reccius, Chile  
50.1 $\frac{7}{8}$ —Rajasari, Finland  
49.11 $\frac{1}{4}$ —Ilovaara, Finland  
49.7 $\frac{3}{8}$ —Luoma, Finland

### Pole Vault

14.11 —Sefton, U.S.A.  
14.11 —Meadows, U.S.A.  
14.7 $\frac{5}{8}$ —Varoff, U.S.A.  
14.7 $\frac{5}{8}$ —Warmerdam, U.S.A.  
14.4 —Mauger, U.S.A.  
14.3 $\frac{1}{4}$ —Ohe, Japan

### Discus Throw

169.2 $\frac{1}{4}$ —Sorlie, Norway  
168.7 —Pritchard, U.S.A.  
168.2 $\frac{1}{4}$ —Kotkas, Finland  
165.8 $\frac{3}{8}$ —Oberweger, Italy  
165.5 $\frac{5}{8}$ —Schroeder, Germany

### Javelin Throw

250.10 $\frac{5}{8}$ —Jarvinen, Finland  
245.4 $\frac{1}{4}$ —Nikkanen, Finland  
235.0 $\frac{7}{8}$ —Atterval, Sweden  
231.2 $\frac{1}{2}$ —Issak, Estonia  
230.10 —Sule, Estonia

### 16-Lb. Shot Put

53.6 —Francis, U.S.A.  
53.4 $\frac{1}{2}$ —Woellke, Germany  
52.10 $\frac{1}{4}$ —Watson, U.S.A.  
52.7 $\frac{3}{8}$ —Reynolds, U.S.A.  
52.2 $\frac{3}{8}$ —Zaitz, U.S.A.

### 16-Lb. Hammer Throw

198.8 $\frac{3}{8}$ —O'Callaghan, Ireland  
185.11 $\frac{1}{2}$ —Hein, Germany  
179.3 $\frac{1}{2}$ —Blask, Germany  
179.2 $\frac{1}{2}$ —Folwarshtny, U.S.A.  
178.7 $\frac{3}{10}$ —Lutz, Germany

(J. B. P.)

**Great Britain and Europe.**—The match between the United States and Europe, which was looked forward to as a feature



of the Paris exhibition of 1937, did not mature. Its place was taken by the World Student Championships, which resulted as follows: Germany, 126 points; England, 107½; France, 40; Hungary, 27; Estonia, 26½; Scotland, 26. Had the English and Scottish teams been combined as in previous years, Great Britain would have scored an easy victory. England won all the flat events, with C. B. Holmes, in the sprints, and J. W. L. Alford, in the middle distances, securing double victories. A. G. K. Brown equalled the 400 metres record of 47.8secs., and F. R. Webster, the first British athlete to win a field event at these games, took the pole vault at 12ft. 8½ inches.

At the Inter-University sports, Cambridge defeated Oxford by nine events to two, records being made by A. Irfan (C.) in the shot put, 49ft. 3¼ins., and A. G. K. Brown (C.), 44oyds. in 48.4 secs. Cambridge, scoring 80 points to Oxford's 66 and London's 63, also won the Championship of the British Universities. In the relay races, run on Nov. 27, Oxford beat Cambridge by four events to three. On tour in the U.S.A. and Canada, the combined Oxford and Cambridge team defeated Harvard and Yale and the Canadian teams. Notable features were: A. E. Pennington's sprint double against Harvard and Yale, and his 220-yds. record of 21.3secs.; A. G. K. Brown's 440- and 880-yds. double, with 440-yds. record of 47.7secs.; and C. A. J. Emery's mile in 4mins. 13.8secs. In the match *v.* Princeton and Cornell, Brown and Pennington again produced doubles; Irfan and Kennedy (C.) made new meet records for the shot, 47ft. 7ins., and high jump, 6ft. 3½ins.; while Webster (C.), clearing 13ft., beat the American Intercollegiate champion, Medina, in the pole vault. Perina, Princeton, made a new broad jump record of 24ft. 7½ inches.

A welcome feature of the European year was the many more international obligations accepted by Great Britain. In her two principal fixtures, Great Britain defeated France by 66 points to 54 and Germany by 69 points to 67. In September an under-strength British team toured Scandinavia, and was defeated by Finland, 92 points to 67, and by Norway, 74 points to 65. During this tour, D. O. Finlay (G.B.), equalled the world's 110-metres hurdles record of 14.1 seconds.

Sweden achieved a notable victory over Germany, 107 points to 101, and also beat Hungary. Germany had the distinction, on Aug. 15, of defeating, in separate matches, Belgium, 112 to 74; Denmark, 104 to 76; Czechoslovakia, 129 to 79; Austria, 118 to 77; Poland, 96 to 72; and Switzerland 90 to 68.

A survey of the positions of the European nations shows Denmark to be undistinguished, except for Larsen's pole vault of 13ft. 4 inches. Estonia has two good men in Sule, who has thrown the javelin 233ft., and Kreek, a 51-ft. shot putter. Poland has in Schneider a 13-ft. pole vaulter, and in Gierutto a 51-ft. shot putter, while Kucharski ran 800 metres in 1min. 52.4secs. and 1,500 metres in 3mins. 58.5 seconds.

In Central Europe, Czechoslovakia has made little progress, save for her 172-ft. hammer thrower, Knotek. Austrian athletes are improving, and Proksch, clearing 13ft. 6ins., is the best European pole vaulter of the year. Switzerland's reputation still depends upon Haenni, who beat the American negro, Ben Johnson, at 100 metres in 10.4secs. and 200 metres in 21.3secs. The Hungarians' best man, Szabo, has made a world's 2-miles record of 8mins. 56 seconds. Gynes, the sprinter, and Kelen, who ran 10,000 metres in 31mins. 17secs., are in the top class, while Kovac's 53.4secs. for the 400-metres hurdles was only equalled during 1937 by Hoelling of Germany. Zsuffka pole-vaulted 13ft. 4ins., and Varszegi threw the javelin 231 feet.

Greece won the Balkan Games with 120 points from Rumania 104, Yugoslavia 69, Turkey 26, and Bulgaria 11.

Italy has great athletes in Lanzi, who returned 1min. 50.5secs. for an 800-metres European record, while Beccali covered 1,500

## TRACTORS—TRADE AGREEMENTS

metres in 3mins. 51.2secs., which is about ¼sec. slower than the world's mile record of 4mins. 6.4secs., made by S. C. Wooderson (England). Mariani has 10.4secs. for 100 metres, Caldana 14.8secs. for 110-metres hurdles, while Maffei's long jump of over 25ft. has only been bettered in Europe by Long of Germany. Holland has first-class sprinters in Osendarp and van Beveren, while P. O'Callaghan (Ireland), has thrown the 16-lbs. hammer 198ft. 8.6 inches.

The Finns are as remarkable as ever. Matti Jarvinen threw the javelin 250ft. 10.6ins.; Maeki, returning 14mins. 28.8secs., narrowly beat P. Ward (Great Britain) in the 5,000 metres; and the veteran, Sjoestedt, returned 14.3secs. for the 110-metres hurdles. Germany had three outstanding men in Hein, who made a new national hammer-throwing record of 185ft. 11½ins., Woellke, who made a new British shot-putting record of 52ft. 5ins., and Harbig, who established German records at 400 and 800 metres in 47.6 secs. and 1min. 50.9secs. respectively.

Outstanding performances in Great Britain were the ½-mile records of A. J. Collyer, 1min. 53.1secs., and F. R. Handley, 1min. 52.9secs.; S. C. Wooderson's 1-mile world record, 4mins. 6.4secs.; D. O. Finlay's high hurdles record of 14.5secs.; S. Wilson's javelin record, 194ft. 2ins.; and F. R. Webster's indoor pole vault record, 12ft. 9½ inches. (F. A. M. W.)

**Tractors:** see AGRICULTURE: *Internal Combustion Engine.*

**Trade Agreements.** The year 1937 has marked definite progress in carrying forward the American trade agreements program. Of high importance was the announcement on Nov. 18, 1937 of contemplated negotiations between the United States and the United Kingdom. On the following day a similar announcement was made with regard to Canada. Trade agreement negotiations were also initiated during the year with Ecuador, Czechoslovakia, Venezuela and Turkey.

**The Trade Agreements Calendar.**—At the end of the year the Trade Agreements Calendar stood as follows:

*Preliminary Announcement that Negotiations are Contemplated*

Country	Date of Preliminary Announcement	Latest Date for Submitting Suggestions
Venezuela . . . . .	Oct. 26, 1937	Nov. 26, 1937
Turkey . . . . .	Nov. 3, 1937	Dec. 3, 1937
United Kingdom . . . . .	Nov. 18, 1937	Dec. 16, 1937
Canada . . . . .	Nov. 19, 1937	Dec. 17, 1937

*Public Notice of Intention to Negotiate*

Country	Public Notice of Intention to Negotiate Issued	Latest Date for Submitting Written Statements	Date for Oral Presentation of Views
Ecuador . . . . .	April 5, 1937	May 3, 1937	May 17, 1937
Czechoslovakia . . . . .	Aug. 31, 1937	Oct. 11, 1937	Oct. 25, 1937

The year 1937 also marked the passage by the American Congress of a Joint Resolution, approved on March 1, renewing for another three-year period the authority originally conferred upon the president on June 12, 1934, to enter into trade agreements with foreign nations.

The American trade agreements program grew out of the conditions and needs resulting from the world depression following 1929. Nations had entered into feverish competition with each other to sell to foreigners a maximum and to buy from foreigners a minimum of goods. Trade barriers had been built up to unprecedented heights. To constantly mounting tariff walls were added entirely new economic devices for regulating trade—quota restrictions, exchange controls, government trade monopolies, and ex-



port and import licensing requirements. The trade highways of the world became blocked with impassable barriers. International trade fell to a third of its 1929 value. From 1929 to 1933 the value of American foreign trade fell from \$9,640,000,000 to only \$3,125,000,000. The resulting economic and social dislocation was the cause of widespread suffering.

To meet this national emergency, legislation designed to increase American foreign trade was worked out upon the basis of three principles of tariff making, each of which has been separately adopted heretofore in American legislation, but which in combination are entirely new. The three principles are these: (1) Congressional delegation to the president of the power of tariff adjustment within prescribed limits. (2) Tariff negotiation by executive agreement. (3) Generalization of all tariff reductions (except those granted to Cuba) to the products of all countries which do not discriminate against American commerce.

The Trade Agreements Act, signed on June 12, 1934, offers a new program based upon these three accepted principles. The act authorizes the president "for the purpose of expanding foreign markets for the products of the United States" (1) "to enter into foreign trade agreements" and (2) "to proclaim such modifications of existing duties . . . or such additional import restrictions, or such continuance . . . of existing customs or excise treatment of any article covered by foreign trade agreements, as are required or appropriate to carry out" such agreements. The President may not modify existing customs duties beyond 50% nor may he transfer any article between the dutiable and the free lists. The duties thus proclaimed by the president are made applicable to the products of all countries, except that the president may suspend their application to the products of any country "because of its discriminatory treatment of American commerce or because of other acts or policies" which tend to defeat the purposes of the act. The exceptional situation of Cuba is recognized by a provision for an exclusive preferential agreement with Cuba, thus continuing the preferential relationship established by the Commercial Convention of 1902.

The trade agreements program, designed to combat existing world tendencies toward economic nationalism, has a two-fold objective. It seeks, first, the reduction or elimination of excessive trade barriers. Trade barriers such as impede international commerce cause diminished national incomes, depressed standards of living, increased unemployment, financial instability and social unrest. The second objective of the program is the elimination of trade discriminations. Trade discriminations lead to constantly shifting trade currents, commercial uncertainty and insecurity, recriminations and retaliations, trade conflict and war.

The success of the program has been very marked. Since the passage of the act in 1934 16 trade agreements have been made with countries whose trade embraces almost 40% of the total foreign trade of the United States. By means of these agreements trade barriers have been reduced, discriminations eliminated and valuable concessions obtained. The foreign trade of the United States has increased rapidly. Its value in 1937, according to preliminary estimates, was double that of 1933, the year before the trade agreements program was initiated. Whereas the total foreign trade of the United States with non-trade agreement countries increased in 1936 over 1935 by 9.2%, that with trade agreement countries increased by 18.2%. During the first ten months of 1937 (the latest period for which definitive figures are available), while imports into the United States were affected far more by the effects of the severe drought of 1936 and of the industrial recovery than by trade agreements, exports to agreement countries increased by 43.3% over the same period in the preceding year as contrasted with an increase of 31.3% in exports to non-agreement countries.

The effects of the program are world-wide. With the powerful leverage which it affords, the United States has been able to make definite progress in countering the world movement toward arbitrary and discriminatory methods of governmental control over trade and monetary exchange. It is a program which has made and is making for international peace. (F. B. S.)

**British Empire, Europe and Asia.**—A large number of trade pacts were made in 1937. The Reciprocal Trade Agreements program of the United States was advanced only by a single treaty, but the expiry of the minimum period of the Ottawa agreements caused considerable activity in this field in the British Commonwealth; the Oslo group entered into a new understanding; and there were many other trade agreements in Europe and elsewhere.

The United Kingdom-Canada agreement of February stabilized, on the British side, the duty-free entry of many Canadian goods and other privileges maintained under the Ottawa agreement, which it replaced. The United Kingdom lowered the duty on silk stockings and reed organs, and promised not to increase the duty on Canadian motor-cars. Canada lowered the preferential duties on 150 tariff items or sub-items, and conventionalized duty-free entry of other important classes. On a number of articles she guaranteed maximum preferential rates of duty in place of former minimum margins of preference. In September, Canada signed pacts with Australia and New Zealand amending earlier trade agreements; Canadian duties on mutton and lamb and other important products were reduced (*see* TARIFFS). Canada also made fresh arrangements, on most-favoured-nation lines, with Brazil, Uruguay, El Salvador, and France. Under the exchange of notes with France (July), the latter extended her minimum tariff to additional Canadian products and enlarged the quota for Canadian cheese, while Canada renounced certain other quota rights. Negotiations for the amendment of the United Kingdom's Ottawa agreements with India and New Zealand failed of success in 1937, the old arrangements being further prolonged. Australia and South Africa deferred such negotiations until the position between Great Britain and the United States should be clarified. Australia's new most-favoured-nation pacts with Belgium, Czechoslovakia, and France went into force in Jan. 1937. South Africa established most-favoured-nation relations with Czechoslovakia (January) and with Belgium (July). Under a trade agreement with Germany (September), New Zealand reduced intermediate duties on important German products, and abolished primage duty on others; an accompanying payments agreement pledged Germany to employ in purchasing New Zealand goods the whole of the exchange derived from her exports to New Zealand. India renewed and readjusted (April) her convention with Japan, varying her maximum import of Japanese cotton piece-goods in accordance with Japan's purchases of Indian raw cotton. The political separation of Burma necessitated a separate Burmo-Japanese convention (June). The German-Irish Free State treaty, renewed with effect from Jan. 1937, fixed a ratio of three-to-two between Irish import and export trade with Germany. The Free State and the United Kingdom extended their so-called coal-cattle pact in January, the latter removing the special duties on Irish horses, the former those on sugar and subsidiary products. The United Kingdom signed a most-favoured-nation agreement with Cuba (February), and by an exchange of notes (November) kept alive a denounced treaty of commerce with Siam.

A new arrangement among the Oslo Powers (Belgium-Luxemburg, Denmark, Finland, Netherlands, Norway, Sweden) was signed at The Hague on May 28. Belgium-Luxemburg and the Netherlands undertook to admit without restriction the import of a long list of goods from the other signatories, and not to take any initiative tending to increase duties on such goods or to impose new ones. The Scandinavian countries and the Netherlands



East Indies similarly pledged themselves not to increase or impose duties on other lists of goods, nor to subject to quantitative restriction imports from the signatory countries of any listed goods then entering duty free.

Among other European trade agreements made in 1937, those of France may be specially mentioned. The Franco-Canadian pact has been recorded above. Franco-German commercial and payments agreements were signed in July. France granted most-favoured-nation and minimum-tariff treatment to specified German goods, comprising most tariff items, and also consolidated the duties on a long list of articles. Germany, in return, reduced or consolidated duties on an important list of French goods. Should any of these concessions be withdrawn, with due notice, by either party, the other could request the opening of negotiations between special Government committees created to settle questions arising out of the agreement. Under the payments pact, all clearing arrangements were set aside. The exchange resulting from German exports to France would be made available (after certain deductions, including a proportion of free exchange for the use of the Reichsbank) for buying French goods. Private compensation transactions were forbidden. In May, a Franco-Polish trade treaty was concluded, to replace an agreement of 1936. Most-favoured-nation and minimum-tariff concessions were exchanged. France reduced duties on Polish sheep and mutton, Poland her duties on wines, fancy leather, hosiery, etc.; Poland also promised safeguards for the local names of French wines—a common feature of French commercial pacts. During 1937, France also signed agreements, on most-favoured-nation lines, with Switzerland (April), Haiti (April), Ecuador (August), Latvia (October), Estonia (November). Her treaties with Honduras and Siam, on the other hand, were denounced. (H. V. H.)

**Trades Union Congress.** The British Trades Union Congress, founded in 1868, is a voluntary association of trade unions which meets every year in September, and now represents 214 unions with a membership of 4½ millions. Its executive work is carried on by an elected general council of 32 members. Its activities during 1937 covered many questions of trade union organization, attention being concentrated in the main on the distributive trades, youth, the nursing profession, and women's organization, all of which are numerically backward in trade unionism.

In the realm of health and welfare, much attention was devoted to improving factory legislation, to the schedule of industrial diseases, to improvements in workmen's compensation, health and unemployment insurance, and especially to trying to secure increased benefits and allowances. Holidays with pay were the subject of evidence submitted to a government commission, the Trades Union Congress seeking to establish 12 days' paid holidays after 12 months' employment, and other holidays proportionate to length of service.

In conjunction with the British Medical Association, a scheme was submitted for the rehabilitation of injured workmen, to be operated in association with the hospital fracture clinics. Other matters under review were a national maternity service and a comprehensive public health service.

In the educational sphere, scholarships were granted for young workers to Ruskin college, Oxford; and many week-end schools and a summer school were held on trade union subjects. Students were also sent to the summer school of the International Federation of Trade Unions at Brunnsvik, Sweden, and to the International Labour Office at Geneva. Representations to the education authorities were made to minimize the adverse effects of the exemption clauses of the Education Act, 1936.

Preliminary steps were taken to create a Scientific Advisory

Council, on which eminent scientists will work in association with the Trades Union Congress; and an advisory committee of experts was appointed to inquire into the conditions of native labour in the British colonies and dependencies.

Among Government and other bodies upon which Trades Union Congress representatives served, were committees and commissions to investigate the cost of living index, the geographical distribution of industrial population, the fair wages clause, and workmen's compensation.

The main subjects discussed at the Norwich congress of 1937 concerned the pensions scheme, promoted in association with the Labour Party to increase pensions to £1 a week at 65 and 35s. for married couples; the establishment of the 40-hour week; holidays with pay; action against the spread of Fascism; the conflict in Spain; Japanese aggression in China; and national defence policy, where the view was expressed that Great Britain needed to be equipped to meet the danger of war and to play its full part in developing collective security and resisting intimidation from any aggressive power. (W. M. C1.)

**Trade Unions:** see LABOUR UNIONS.

**Traffic Laws and Offences.** There have been no striking developments in traffic laws or enforcement methods during the year 1937 in the United States. Such changes as have taken place are the result of gradual improvements during the past several years. Beginning in 1934 there was a resumption of an increase in automobile registration and use due to improved economic conditions. This led to a marked aggravation of traffic difficulties in the two fields of traffic accidents and traffic congestion. Most of the larger cities are hard pressed to maintain a reasonable semblance of safe and orderly movement.

To meet this situation, there has been the development of no new techniques in traffic control methods, but rather a refinement in methods already established. There is a growing emphasis upon the use of factual information as a basis for legislation and control methods in general. For this many cities are better equipped than heretofore due to traffic surveys conducted in recent years largely as relief activities.

Concurrently, there is a growing recognition that the planning of control methods must be delegated to properly trained experts. To this end there has been established a graduate training school in the Harvard university Bureau for Street Traffic Research where from 25 to 30 graduate engineers are trained and placed each year. This training agency is provided with 23 fellowships, 15 from the Automotive Safety Foundation, and eight from the Alfred P. Sloan, Jr. grant.

Parking regulations caused the greatest concern to American cities in the year 1937. This has been partly due to the fact that curb parking increases traffic congestion and partly due to the fact that business is discouraged because many who wish to conduct business cannot find parking places. Many cities have installed parking meters usually requiring the deposit of five cents per hour for permission to park at the curb. Other cities, most notably New York, have provided increasingly rigid control of parking upon the more crowded streets. (M. McC.)

**Great Britain.**—No new legislation regarding motors, motor-ing, or the use of the roads was passed in Great Britain in 1937, but several new regulations were issued by the Ministry of Transport under existing statutes. On Jan. 1 an Order in Council came into force, making various new regulations as to the construction and use of motor vehicles, requiring the use of guard rails on commercial vehicles, making the use of safety glass for wind-screens and all front windows compulsory, and compelling the fit-



ting of an efficient screen-wiper on all fixed wind-screens. New lighting regulations came into operation on Oct. 3, providing that all head-lamps must be fitted with an anti-dazzle device which will deflect the beams of light downwards and to the near side, so that they cannot dazzle a person standing 25ft. away whose eye-level is not less than 3ft. 6in. from the ground; or alternatively that head-lamps must be capable of being extinguished at the same time as other anti-dazzle lamps are brought into operation. The power of side-lamps must be limited to 7 watts, and frosted or other light-diffusing glass must be used for them. It was announced during the year that the Traffic Advisory council is considering, on the Government's behalf, the possibility of requiring cyclists to be registered, and of introducing riding tests, penalties for careless riding, and compulsory rear-lights for cycles. The minister of Transport has also under consideration the question of compelling all cars to carry a device restricting speed to 30 m.p.h. in all built-up areas. In December it was announced that a Select Committee of the Lords was being set up to consider the problem of lessening road fatalities. For statistics of motoring offences in Great Britain see *CRIME: Great Britain*.

**Trailers:** see *TOURING AND TOURIST CAMPS*.

**Trans-Arctic Flying:** see *ARCTIC EXPLORATION*.

**Transbay Bridge:** see *BRIDGES*.

**Trans-Jordan.** Trans-Jordan lies to the east of Palestine, and is bounded on the north by Syria, on the north-east by Iraq, on the south-east and south by Saudi Arabia. Great Britain, as a mandatory of the League of Nations, is responsible for its administration. The powers conferred by the Mandate are, in fact, exercised, as the result of an agreement made in 1928, by His Highness the Amir Abdullah ibn Hussein, through the constitutional machinery defined in an organic law. The Amir is advised by a British resident responsible to the high commissioner, who is also high commissioner for Palestine, and resides at Jerusalem. The capital of Trans-Jordan is Amman. The national flag consists of three equal horizontal stripes of black, white, and green, with a red triangle based on the flagstaff side and containing a seven-pointed white star.

**Area and Population.**—The area of Trans-Jordan is 34,000 sq. mi., and the population, of which no census has yet been taken, is about 300,000. Arabic is the official language and the medium of education.

**History.**—The outstanding political event of the year was the publication of the Peel Commission's report (see *PALESTINE*). If its proposals were to be carried out, Trans-Jordan would be amalgamated with the larger but less fertile part of Palestine, and would acquire outlets to the Mediterranean at Gaza and Jaffa. At the same time, it would become, through the termination of the Mandate, a sovereign State. The plan has obvious attractions for the Amir, but the strength of Arab feeling against the partition of Palestine, both in the neighbouring States and in Trans-Jordan itself, is also an important factor in the situation.

**Trade, Communications, Finance.**—The total value of imported goods in 1936 was £P794,956. There are no complete statistics of exports, but the balance of trade is known to be unfavourable. A boycott of Jewish goods in 1936, coupled with the devaluation of the franc, led to an increase in trade with Syria, at the expense of Palestine. Imports carried through Syria, which in 1933 had been only 5% of those brought through Palestine, rose in 1936 to 84%. The unit of currency is the Palestinian pound, at parity with sterling. The budget of Trans-Jordan is balanced by means of grants-in-aid from the Mandatory Power. The estimated revenue for 1936–37 was £P420,000, of which only £P277,000 was to be raised locally.

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**Transvaal:** see *SOUTH AFRICA, THE UNION OF*.

**Trap-shooting.** The Grand American Trap-shooting championship of 1937, held under the auspices of the Amateur Trap-shooting Association, at Vandalia, Ohio, during the week of Aug. 20, 1937, was attended by more than 1200 shooters. It was the thirty-eighth annual championship. Approximately 750,000 clay targets were trapped. Only three times in the history of the "Grand" have 100 straight targets been shot, including once in 1937, made by Frank G. Carroll, the Grand American Handicap winner at 19 yards; eleven shooters broke 99x100, one target behind the winner. Winners of other classes were:

J. W. Egernan, preliminary handicap, 99x100.

Phil R. Miller, clay target championship of America, 200 straight

Hale C. Jones, champion of champions race, 100x100

Ned Lilly, doubles champion of North America, 98x100

Clyde Mitchell, professional doubles championship, 98x100

Mrs. Lela Hall, women's championship, 194x200

Mr. and Mrs. Fred Hess, husband and wife, 383x400

Tom Lovett, high on 600 16-yard targets, 598x600

R. A. King, high on all targets, 881x900

East-West team winner, West team, 1964x2000

Charles A. Bogert, class championship AA, 200x200

Stanley Meadows, class A championship, 200x200

William Horton, class B championship, 199x200

R. V. Polen, class C championship, 198x200

M. J. Swanick, class D championship, 198x200

J. C. Baker, class E championship, 194x200

Clyde Wells, professional champion, 200x200

State winner, Wisconsin, 982x1000

Stanley Meadows, junior champion, 98x100

Rudy Etchen, sub-junior champion, 95x100

Joe F. Hiestand, long yardage champion, off 25 yards, 93x100

Second in importance in trap-shooting in the U.S., is the Amateur Trap-shooting championships of America, held at the Travers Island traps of the New York Athletic club, May 7–9, 1937, attended by 200 leading nimrods. Walter Beaver was crowned amateur champion of America, with a score of 198; Tracy H. Lewis, second, 197; Joe F. Hiestand and S. M. Crothers, tied for third, each with 196. Doubles champion, Joe F. Hiestand, 98x100; second, A. J. MacDowell, 87x100. Champions of the N.Y.A.C.: Tracy H. Lewis, singles; Charles W. Phellis, doubles; Selah B. Masten, distance.

In the New York State shoot, at Ithaca, N.Y., the winners were: G. C. Lindsley, 200x200; R. H. Helsel, doubles, 194x200; J. A. Seegar, handicap, 97x100. Championships are held in almost every state in the U.S. (J. B. P.)

**Treasury Department:** see *GOVERNMENT DEPARTMENTS AND BUREAUS*.

**Triborough Bridge:** see *BRIDGES*.

**Trinidad and Tobago,** British West Indian colony comprising Trinidad and Tobago islands off the coast of Venezuela; language, English; capital, Port of Spain (pop. 75,680); governor, Sir A. G. M. Fletcher. The area is 1,980 sq. mi., (Trinidad, 1,862 sq. mi.). Population (1931 census) 412,783 (387,425 in Trinidad); (official estimate, 1936) 448,253. East Indians comprise 30% of the population. In June serious strikes by unorganized labour in the oil fields



and the sugar plantations spread to Port of Spain, paralyzing business for a day. Serious rioting occurred, but was suppressed by the local police before the arrival of two British cruisers which had been summoned by radio. In December, the strike leader was tried for sedition and sentenced to two years at hard labour. Meanwhile, a royal commission began a formal investigation.

Trinidad has excellent steamship lines and air service. There are 123mi. of railroad, 1,083mi. of main highways. Imports for 1936 totalled \$27,187,994, and exports \$29,944,534 (besides \$5,836,607 in transit from Venezuela), representing a 20% gain. Trade is principally with Great Britain, the United States and Canada, which account for 40%, 17%, and 12% of imports, and 44%, 15%, and 11% of exports. Leading imports are machinery, foodstuffs, and cotton textiles. Petroleum and asphalt comprised 59.07% of exports in 1936, with sugar and cocoa next. The principal agricultural products are sugar, cocoa, coconuts, and citrus fruits. Petroleum and asphalt are the leading resource. The monetary unit is the Trinidad dollar fixed by law at 4.40 to the pound sterling (value: approximately \$1.04 U.S.). Revenues for 1936 were \$12,560,314; expenditures were \$9,170,686. Public debt was \$20,274,816 in 1936. In 1936, there were 301 primary and other schools, with an enrolment of 76,350, and four teacher-training colleges.

(L. W. BE.)

**Tristan da Cunha.** A British possession, the only permanently inhabited island of a south Atlantic group including Inaccessible island and the three Nightingale islands, in Lat. 37° 6' S., 12° 2' W., far removed from any sea route, and having only an exposed roadstead. Arrangements are made for the islands to be visited at intervals of about a year, generally by a cruiser from Simonstown, South Africa. The population of under 200 are descendants of a garrison placed there during Napoleon's imprisonment at St. Helena, many of them being descendants of Corporal Glass of that garrison. The island is self-supporting, but dependent for comforts on visiting ships and gifts collected by missions in England. Since 1933, there has been a resident chaplain, the Rev. Harold Wilde, maintained by the Society for the Propagation of the Gospel, who acts as doctor, schoolmaster, and magistrate. There are about 170 cattle, 600 sheep and other livestock, and potatoes are raised. In 1937, plans were in preparation for a short stay by a meteorological expedition.

**Trotsky, Lev Davidovich** (1877– ), Russian statesman and international revolutionary leader; since Jan. 1928 an exile, first at Alma Ata, later at Prinkipo (in the sea of Marmara), in France and Norway, and since the end of 1936 in Mexico, from which country he has continued propagandist activities in opposition to the current Stalinist policy of the Comintern. In Feb. 1937, in an interview, Trotsky accused the Soviet Union of "sabotaging" Spanish democracy by withholding its support in the interests of France. A statement issued in June confirmed the existence of a Trotskyist "Fourth International" with a membership of 30,000; and in the same month Trotsky telegraphed to the central executive committee of the Russian Communist Party at Moscow denouncing Stalin and his policy and calling for a reconstruction of the Soviet régime on democratic lines. In the autumn, a slight slackening of the "anti-Trotskyist" purgative measures of the earlier part of the year taking place in Russia (see UNION OF SOVIET SOCIALIST REPUBLICS), rumours arose of attempts at mediation between Trotsky and Stalin which might bring about the former's return.

During the year Trotsky issued "The Revolution Betrayed," an attack on the Stalin régime and a further attempt to prove the impossibility of maintaining a revolution in a single country.

**Trotting,** probably the least publicized of major outdoor American diversions, not only recorded many outstanding track achievements in 1937 but due to an increased public favour resulted in race attendance figures far exceeding those of recent years. No less than 815 harness meetings were officially sanctioned in 1937 in the United States and Canada. The equipment of the operating tracks together with the aggregate of stakes and purses competed for, plus the investment in and the maintenance of racing stables and breeding farms, represented millions of dollars. No other sport in the world employs an investment equal to the outlay devoted to harness racing in America.

The highlights of the 1937 trotting season were many and epochal, among them being the October performance of the five-year-old Greyhound in 1.56 to surpass the previous trotting mark of 1.56½ in 1922 by Peter Manning; the 1.58½ mile by the three-year-old Dean Hanover, driven to a new world record for trotters of his age by Miss Alma Shepard, an eleven-year-old schoolgirl; and the surprising and decisive victory of Shirley Hanover 2.01½ in the \$40,000 Hambletonian in August at Goshen, N.Y. Nor were Dean Hanover's three race heats in 2.00¼, 2.00¾, 2.00¾, a new competitive record for trotters of any age, a less impressive record.

The season-end auction sales of yearlings from the more prominent trotting nurseries established new high sale averages, indicating a healthy demand for juvenile race candidates for 1938; and the seasonal exportations of race material of breeding stock to Continental Europe climbed to new high levels not only in export units but in the ultra-types which were sent abroad. Italy, Sweden, Denmark, Belgium, and Germany were the most liberal purchasers, the trans-Atlantic voyagers including the 1937 Kentucky Futurity winner, Twilight Song (2.01¼), exported to Italy in a \$20,000 transaction.

(F. P. KE.)

**Trucial Sheikhs:** see ARABIA.

**Truck Farming.** While Germany rigidly restricted truck farming, in favour of wheat, rye and other staple crops, including potatoes, elsewhere this branch of agriculture tended to increase in 1937. The Canadian acreage in peas was 92,500 in 1937, compared to 84,000 in 1936; beans, 67,600ac. in 1937 and 64,000ac. in 1936. In the U.S. the area planted to vegetables reached a new record high, estimated by the U.S. Department of Agriculture at about 10,500,000ac., or approximately 3% of all land planted to crops. Production of nearly all truck crops was increased, with the principal exception of onions and artichokes.

Much of the acreage of vegetables for canning was abandoned in 1936 because of drought, but in 1937 there was a new high of approximately 1,580,000ac. for canning. The U.S. Department of Agriculture points out that the canning acreage seems to run in five-year cycles, with three years of expansion during which supplies of canned goods are accumulated above requirements, and then two years of decreased acreages.

Truck crops for marketing have increased steadily in the U.S. from 966,000ac. in 1925 to a previous high of 1,661,000 in 1936, which acreage was exceeded slightly in 1937. The acreage of dry edible beans in 1937 was 1,794,000 acres. For the five years ending in 1935 the acreage of truck crops both for canning and marketing increased by about 50%. The gross income from vegetables, including white potatoes and sweet potatoes, exceeds that of most other major crops, including the grains and tobacco.

About 44% of the vegetable and fruit crops in the U.S. move to market in trucks. There are no separate figures for vegetables, but it is estimated that after the vegetable and fruit crops reached urban markets in 1936 expense of further distribution to





LITTLE ENGLISH GIRLS in a London clinic taking treatments from sun lamps provided by the British Government

the consumer through wholesaling, jobbing, retailing and urban trucking cost \$1,500,000,000. Studies made of vegetable markets in 40 cities indicate that market facilities are greatly antiquated and that substantial economies could be effected by providing better located and equipped markets, especially as to prevention of congestion in truck space.

Marketing of fresh vegetables in frozen form increased greatly in 1937 and included peas, snap beans, lima beans, sweet corn, spinach, asparagus and broccoli. In all about 75 fresh products are now marketed by the "quick freeze" industry and 30,000,000 lbs. of fresh, frozen vegetables, fruits and meats were in storage December 1.

West coast, Mexico, plantings of tomatoes for 1937-38 were about 18,500 ac., from which a crop of 3,000 cars is predicted. Tomato planting in the Bahamas was about 1,000 acres. The Cuban tomato crop was short, owing to weather damage, and exports were also lower because of new grading rules.

(S. O. R.)

**Trucks:** see MOTOR TRUCKS.

**Tuberculosis.** As the first step in the detection of tuberculosis, the tuberculin test has been applied to more than a million persons throughout the United States in 1937. Its place in the tuberculosis control program was evaluated by Harrington and others. Purified Protein Derivative as a testing material has been found fully as effective as Old Tuberculin and has the advantage of being well standardized.

The Tuberculosis Committees of the American Association of School Physicians and the American Student Health Association recommended the use of the tuberculin test for students and personnel of all school systems. The American Student Health Association reports that only 30% of college and university students have been found to react positively to the tuberculin test, whereas, in high schools in many parts of the nation only 10 to 15% react to the test. Whole cities inaugurated tuberculosis control programs through publicity in newspapers and over the radio, with the result that large numbers of adults have had the tuberculin test administered and X-ray examinations of the positive reactors. Magazines, particularly *Life*, *Look*, and the *Literary Digest*, have aided greatly by publishing well illustrated articles during the year.

A special method of making X-ray examinations, known as tomography, has been carefully studied. It eliminates shadows

cast by parts of the body lying behind or in front of the area of disease in the lung. X-ray cameras capable of making a thousand exposures a day on large rolls of paper film at markedly reduced cost are solving the X-ray problem. The Medical Society of the County of Queens in New York State together with the local tuberculosis association, has examined large numbers of children and adults in this manner. In Cuba the tuberculosis program has been placed on a nation-wide basis through the use of the rapid method of making X-ray film examinations of the chest. Already hundreds of thousands of examinations have been made in this way. Final diagnosis cannot be made from the X-ray film. For example, in miliary disease it fails to reveal any evidence whatsoever in 50% of the cases. The X-ray film is used only to weed out those with shadows in order that they may be completely examined to determine whether the shadows are due to tuberculosis.

As an aid in determining the presence and progressiveness of tuberculosis, numerous workers have used the red blood-cell sedimentation test and differential white blood-cell counts. Sweany has developed a composite blood chart which can be used to advantage in observing the course of tuberculosis. Through the bronchoscopic examination, tuberculosis of the trachea and bronchi can be detected when all other methods of examination fail. Serious tuberculosis develops more often among persons who suffer from silicosis than among those of the general population.

Hospital beds for the isolation and treatment of the tuberculous have been increased by the construction of new sanatoriums in such States as Florida and North Carolina. The total capacity of such institutions was in 1937 approximately 80,000. General hospitals are admitting about 35,000 tuberculous patients annually. The sanatorium is no longer looked upon as an institution only for the treatment of the ill; its staff takes part in the public health activities of the district it serves.

The use of collapse therapy in all forms has been widely extended. Numerous articles have appeared in such publications as the *American Review of Tuberculosis*, the *Journal of the American Medical Association*, and the *Journal of Thoracic Surgery*. An excellent book on this subject by Alexander appeared during the year. Lindsag removed an entire lung which contained extensive tuberculous disease. Pneumoperitoneum has been introduced in a rather extensive way to bring about an elevation of the diaphragm and thus reduce the movement of the lungs to aid in controlling pulmonary tuberculosis.



Inasmuch as children rarely develop chronic tuberculous disease in serious form, the emphasis in the campaign against tuberculosis has shifted to adults, beginning with the period of adolescence and carrying through senility. Diehl and others have called attention to the fact that adults previously uninfected develop the same type of tuberculosis as the child, if they come in contact with tuberculous patients. Jennings reports the incidence of tuberculous disease among persons beyond the age of fifty years is definitely increasing. A geographic study of the distribution of tuberculosis mortality in the South-eastern United States reveals the areas of concentration of disease. A complete map of the United States is now being prepared. The tuberculosis mortality rate in the United States has been reduced from 200 per 100,000 in 1900 to 55-60 per 100,000 in 1937.

The control of tuberculosis among the fifty-five million cattle of the United States has progressed rapidly. At the close of 1937 all but two States were accredited. Tuberculosis among swine and chickens has been recognized as a serious economic problem in some sections and great effort was put forth this year to solve this problem. The control of tuberculosis among animals has materially aided in reducing the disease among human beings.

The best work in the prevention of tuberculosis is being accomplished by avoiding exposure or setting up barriers between those who have the disease and the uninfected. Attempts to produce immunity through vaccination with BCG have continued but reports showing unsatisfactory results have led to much controversy. Therefore, enthusiasm for the method is definitely on the wane in many places. The veterinarians of the United States have completely abandoned BCG in their program of tuberculosis control among cattle. Efforts to desensitize animals and human beings to tuberculo-protein, thus minimizing the severe reactions from endogenous and exogenous reinfections with tubercle bacilli, have progressed. Rehabilitation of tuberculous patients whose former work was of such a nature as to be hazardous after recovery is being accomplished through re-education.

The sale of the double-barred cross tuberculosis Christmas seal through the component organizations of the National Tuberculosis Association has continued to gain in favour with the public, as indicated by the interest manifested. The annual income from this seal amounts to four or five million dollars, which is used largely in a nation-wide campaign of education.

For statistics see PUBLIC HEALTH SERVICES. (J. A. My.)

## Tukhachevsky, Mikhail Nikolaevich

(1893-1937), Russian soldier and youngest of five field marshals of the Soviet Union, was one of eight generals shot upon charges of Trotskyism and treason on June 12, 1937. Born the son of a provincial nobleman in 1893, he helped Trotsky build the Red Army and succeeded to the posts of Chief of the Military Academy and Assistant Chief of Staff of the Red Army. A short account of his life is to be found in the *Encyclopædia Britannica*, vol. 22, p. 538.

## Tungsten.

The world's tungsten producing industry centres mostly in South-eastern Asia, where about 77% of the total originates, 37% from China, 24% from Burma, 10% from Malaya, and 6% from other adjacent territory. Of production elsewhere, the United States supplies about 10%, and about the same is furnished by Bolivia and Portugal, in about equal amounts; other outputs are small and widely scattered. The world total in 1930 was 16,700 metric tons of concentrates carrying 60%  $WO_3$ , declining in 1932 to 6,800 tons; this has steadily improved, reaching about 22,000 tons in 1935, with a further, still undetermined increase in 1936 and 1937. In spite of disturb-



NEW YORK CITY ENTRANCE to the Lincoln tunnel under the Hudson river, connecting with Weehawken, New Jersey

ances incident to the Japanese invasion of China, the Chinese exports for the first half of 1937 were well in advance of those for 1936, but information is still lacking as to developments later in the year; exports from Burma during the same period also showed marked increase.

The United States industry is very erratic, and in spite of exceptionally heavy tariff protection is more or less at the mercy of world prices. An output of 1,100 metric tons in 1928 decreased in 1929 and 1930, but rose to 1,270 tons in 1931, and again declined to 360 tons in 1932; since then increases have been regular, reaching 2,270 tons in 1935 and 2,380 tons in 1936.

With one war scarcely finished, two more in active progress, and rearmament measures under way in at least half a dozen of the leading nations, the demand for tungsten is insistent, and bids fair to continue so for some time to come. (See also MACHINERY AND MACHINE TOOLS.)

(G. A. Ro.)

**Tunis**, a French protectorate in North Africa, lying between Algeria and Tripoli and extending to the Sahara. The ruler is the bey, Sidi Ahmed, under the direction of a French resident-general, M. Armand Guillon. The capital is Tunis. Area 48,300 sq.mi.; population (1931) 2,410,692, including 195,293 Europeans. The inhabitants are predominantly Mohammedan. Education is fairly well advanced.

**History.**—The coming into power of the Front Populaire in France was the signal in Tunis for disturbances (see also ALGERIA). The administration of the resident-general, M. Guillon, sometimes, particularly in the first months, showed weakness in dealing with the instigators of risings. Strikes took place at Met-laoui (19 killed, 27 wounded), and at M'Dilla on March 4 and 5. One of the leaders of the Nationalist movement, Habib-Bourguiba, manager of *L'Action Tunisienne*, returning from a stay in France, declared in an interview on May 6 that he had confidence in the Front Populaire, and that "we are in a state of war with our enemies" (meaning the French). On July 9 the "father of the *Destour*," Sheikh Talbi, coming from the East where he had been exiled, was welcomed with enthusiasm. But his understanding with the young *Destouriens* was of short duration. Encounters took place between the partisans of the old *Destour* and the militant wing of the new.

In July, the resident-general promulgated a series of decrees reorganizing the administration and making changes in the person-



## TUNNELS

nel. This action may probably presage a more energetic policy and a reduction in the number of French officials.

A serious incident took place at Tunis on Sept. 20, when naval cadets from two Italian training-ships put themselves at the head of Italian Fascists and attacked the local offices of the Italian League for the Rights of Man and two other clubs, and killed a man. Considerable feeling was aroused in Tunis, and diplomatic protests were sent to Rome.

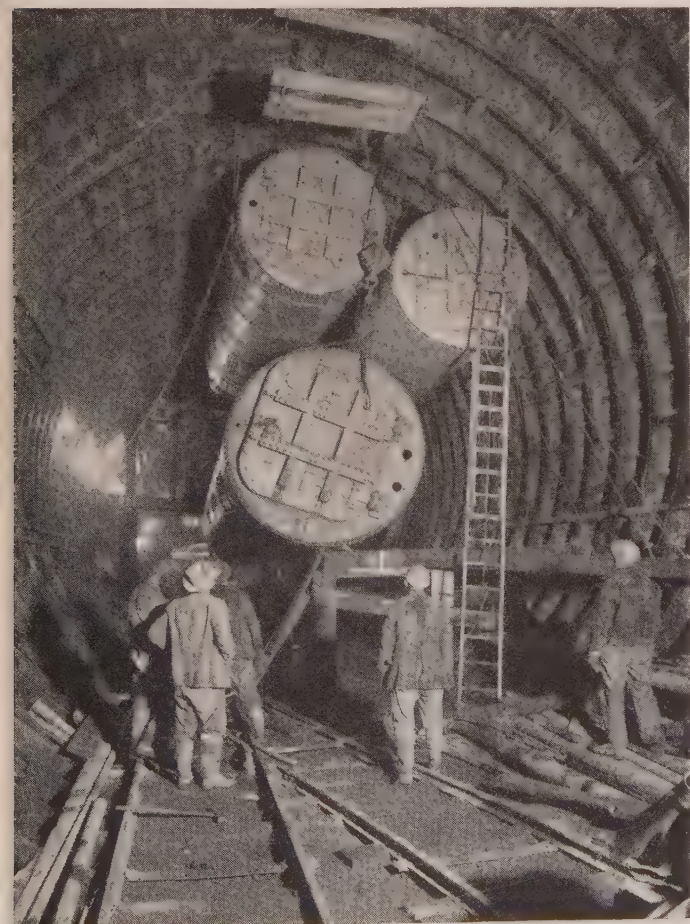
**Trade and Communications.**—The principal products are wheat, barley, oats, wine, and olives; and there is an increasing output of phosphates. There are nearly 1,300mi. of railways, and about 3,900mi of roads. Tunis is connected by air with Marseilles by Air France, and with Rome by Ala Littoria. (R. PIN.)

**Tunnels.** The sciences and arts applied to tunnel design and construction have made such advances during the past thirty years that today with the basic tunnelling costs of labour and materials two to three times greater, one finds that the field cost of the product in some cases is but little greater and in exceptional cases less. This greater feasibility of driving in soft or instable ground and rock has encouraged adoption of tunnels especially for railways, highways, and aqueducts under barriers such as cities, waterways and mountains. The increased use of mechanical equipment is however limiting the opportunity to train young miners in the higher art of holding ground forces in cases where only manual work is possible.

The Independent subway of New York city partly in use several years ago is now in full use with over nine miles of its length in tunnel. In London where practically all underground transit is in tunnel, another 16 miles of route or 32 miles of tun-



LINCOLN TUNNEL, second motor trafficway under the Hudson river connecting New York and New Jersey. The view shows the first tube of the tunnel, to which a second, parallel tube is to be added by 1941



TUNNEL CONSTRUCTION. Installing air locks through which men and materials pass between the section already excavated and the boring chamber where heavily compressed air keeps out water and silt

nel was begun, but generally under ground conditions more favourable than prevail in New York. New York also on December 21 opened a highway tunnel constructed by the Port of New York Authority in the peculiar silt under the Hudson river. Construction of a parallel tunnel was begun early in 1938. In addition, the construction of a pair of highway tunnels under the East river to Queens was begun—a work of considerable geological proportions in rock variegations and glacial formation. London began construction of another highway tunnel under the Thames at Purfleet and is seeking Parliamentary powers to duplicate the Blackwall highway tunnel built in 1895. Many tunnels are under construction throughout the world for hydroelectric, water supply, irrigation and other uses, some of great length and some of great dimensions.

The 31 tunnels in rock of the Colorado aqueduct represent almost 80mi. of tunnelling.

Recent tunnelling with the aid of compressed air has not required any high degree of air pressures. Labour laws by diminishing working shifts when air pressures exceed 18lbs. per square inch have greatly increased costs. Added processes and comforts on behalf of health and safety have given the workers greatly increased immunity from compressed air troubles. In view of alleged acquisition of silicosis in rock tunnel construction and labour acts concerning the disease at large, investigations and dust control experiments are being conducted. While the protection of the health of the workers is of prime importance this present consciousness is particularly interesting so far as it concerns rock tunnels where practically all drilling is now wet and has been for over 20 years. A recent survey of Great Britain reveals that the death rate of hewers from 20 to 55 years is less than the death rate of all males up to the age of 55 years and beyond that but little greater.



The following selected list gives some of the longest railroad tunnels measured from portal to portal.

Name	Location	Length
Simplon	Alps	12.3 mi.
St. Gotthard	Alps	9.3 mi.
Loetschberg	Alps	9.0 mi.
Mt. Cenis	Alps	8.0 mi.
New Cascade	Washington	7.8 mi.
Moffat	Colorado	6.2 mi.
Rogers Pass	British Columbia	5.0 mi.
Hoosac	Massachusetts	4.7 mi.
Otira	New Zealand	5.3 mi.
Severn	England	4.4 mi.
Apennine	Italy	11.5 mi.
Shimizu	Japan	6.1 mi.
Mt. Royal	Montreal	3.3 mi.
P.R.R.	New York	2.6 mi.

(J. FE.)

**Turkestan, Chinese:** *see* SIN KIANG.

**Turkey**, republic of the Near East, comprising Asia Minor, the greater part of Armenia and Kurdistan, and a part of the European peninsula between the Black sea and the Aegean; since 1923 a republic under the presidency of Kamâl Atatürk, formerly Ghazi Mustafa Kemal, last re-elected to that office in March 1935, with a single-chamber legislature (the Kamutay) of 399 members and an executive consisting of ministers chosen by the president.

**Area and Population.**—Area, 295,000 sq.mi., of which about 9,250 sq.mi. are in Europe. Population (1935 census), 16,200,000, of various races, including considerable numbers of Kurds, Jews, Armenians, etc., who are in great majority Mohammedans, though Islam is no longer legalized as a State religion: in European Turkey and the Armenian districts there are many Christians. Education is free and compulsory, and very rapid strides have been made in this field in the last few years: in 1934-35 there were about 6,500 elementary and 120 secondary schools, with some 650,000 and 50,000 pupils respectively. Universities exist at Ankara and Istanbul. The capital is Ankara (pop. 125,000), but Istanbul (formerly Constantinople) is by far the largest city, with a population of *c.* 745,000. Izmir (Smyrna) has 170,000 inhabitants, and four other towns pass the 50,000 mark.

**History.**—In Feb. 1937 three constitutional amendments were adopted by the Kamutay or National Assembly, the first adding to the clause establishing the Republican form of government a declaration that the principles of the Republican People's Party should be followed, the second allowing for the expropriation of large rural properties for the benefit of the peasants, and the third denying the general religious freedom to sects suspected of holding secret meetings for their rites. On Sept. 27 the premier, Gen. Ismet İnönü, who had held office for 12 years, resigned, being succeeded by Djelal Bayer, a banker, and former minister of National Economy, the personnel of whose new cabinet was announced on Nov. 9.

The refortification of the Dardanelles, which had been consented to by the League of Nations in Nov. 1936, was agreed to by Italy in Feb. 1937, but Germany at the end of the same month raised certain objections to the Montreux Convention by which the question had been regulated. In February, negotiations began for a new clearing agreement with Germany; and in May friendship with Greece was reaffirmed by Gen. İnönü, the premier, during a visit to Athens. A trade agreement with Japan was concluded in August, and Turkey was a party to the treaty of Saadabad (*see* ISLAM) signed in July. The Turco-Syrian treaty of 1926 was denounced in December. In August, Turkish patrols in the Dardanelles were doubled, after attacks on Spanish Government shipping there had been made by unidentified submarines; and after Turkey had become a party to the Nyon agreement of September her naval forces in that quarter were

further reinforced. (*See also* ALEXANDRETTA, SANJAK OF.)

**Agriculture.**—Agriculture is Turkey's chief industry; wheat, barley and other cereals, tobacco, figs, raisins, and nuts being the chief vegetable products. The mineral resources, though not yet extensively developed, are great, and include chrome, coal, and copper. A three-year plan for the development of this mineral wealth was approved in 1937 envisaging the doubling of the coal and chrome output. Manufactures are being rapidly developed; an initial five-year plan of industrialization is almost completed, and a second began with 1937, largely devoted to the erection of power stations and the equipment of yards in which Turkey may build her own ships. Communications are being overhauled and extended throughout the country: over 4,000mi. of railways are already opened, and some 600mi. are under construction. In 1937 Turkey owned some 195,000 gross tons of merchant shipping.

**Banking and Finance.**—The 1937-38 budget balanced the country's revenue and expenditure at £37,400,000, allowing in addition for an extraordinary credit of £6,000,000 for defence and public works. Income and land taxation, customs, and certain State monopolies are the principal sources of revenue. Trade figures for 1936 indicate imports of *c.* £15,320,000 and exports of *c.* £19,620,000. There are five State-controlled banks, besides the new Deniz or sea bank established in 1937 to concern itself with maritime trade. The monetary unit is the lira or Turkish pound of 100 piastres, nominally valued at 18s. sterling, but exchanging at the end of 1937 at the rate of 6.20 Turkish pounds to the pound sterling.

**Defence.**—Military service is universal and compulsory: the effective strength of the army is about 200,000 officers and men, that of the air force about 9,000, with about 400 first-line aircraft. The navy includes four battleships and cruisers, with smaller craft. In 1937 a law made women equally with men liable for military service.

**Turkmen S.S.R.**, a member of the U.S.S.R. (*q.v.*), lies between the Caspian sea in the west, the river Amu-Darya in the east, the republics of Kazakhstan and Uzbekistan in the north, and Iran and Afghanistan in the south. The capital is Ashkhabad, and the national flag, a red ground, with gold initials TCCP in top left corner. Of the leading cities Ashkhabad had in 1936 102,500 inhabitants, and Krasnovodsk 27,000. Area: 444,000 sq.km. chiefly comprising the Desert of Kara-Kum. The sparse population lives for the most part in the oasis districts in the south and east. Population (1933), 1,269,000 (rural 1,024,000, urban 245,000), of whom 72% were Turkmen. On March 2 the new Constitution was adopted by the Sixth Extraordinary Soviet Congress in Ashkhabad. The republic consists accordingly of 2 regions and 32 districts. Sown area (1936) 15,282 square miles. The main occupations are cotton growing in the oasis regions, fruit cultivation, cattle farming (caracul sheep), and riding-horse breeding. Natural resources include oil and sulphur. The retail trade turnover (1936) was 0.8 milliard roubles. Exports: cotton, fruit, oil, carpets, caracul. The 1936 output of industry (at prices 1926-27) was 214,000,000 roubles; and that of electricity, 48,000,000 kilowatt-hours. The only railway line is from Krasnovodsk on the Caspian sea to Cohardzhuy, with a branch line from Merv to Kushka. (S. YAK.)

**Turpentine:** *see* CHEMISTRY, APPLIED.

**Tweedsmuir, John Buchan**, 1ST BARON, G.C.M.G., C.H. (1878- ), governor-general of Canada. Private secretary to Sir Alfred (Lord) Milner in South Africa (1901-03), Mr. Buchan was on the head-



quarter staff during the World War (1916-17), and became widely known as a writer of novels and romances, also of a *History of the Great War* and some biographies; he was M.P. for the Scottish universities 1927-35, and Lord High Commissioner to the Assembly of the Church of Scotland, 1933 and 1934. He was appointed governor-general of Canada in March 1935, was raised to the peerage, and on November 2, assumed office. In March 1937, Lord Tweedsmuir created a precedent by paying an official visit to President Roosevelt in Washington, Mr. Roosevelt having called upon him in Ottawa in the previous year. In May he went among the Mohawk Indians on their reservation at Brantford, Ont.; then came a two months' tour of the Far West of Canada, the Mackenzie delta, Hudson's bay, and the Arctic portion of the Dominion, when Indian chiefs and Eskimos were visited. A trip to Nova Scotia followed. Lord Tweedsmuir's life of the Roman Emperor Augustus appeared in October 1937, and in December he was elected chancellor of Edinburgh university.

**Tyrol:** see AUSTRIA.

**U-Boat Pirates:** see MEDITERRANEAN, THE.

**Uganda.** A British protectorate in East Africa, extending from S. lat. 1° to the northern limits of the Albert Nile at Nimule, the eastern boundary being a line drawn from Mount Zulia on the Sudan border along the Turkana escarpment to the crater of Mount Elgon, and thence along the Malwa and Sio rivers into the north-eastern waters of Lake Victoria; the territory is bounded S. by Tanganyika territory, and W. by the Belgian Congo. Uganda is directly administered by the governor, Sir P. E. Mitchell, K.C.M.G.; but the province of Buganda is recognized as a native kingdom under a *kabaka*, H. H. Sir Daudi Chwa, K.C.M.G., a grandson of Mtesa. The administrative capital is Entebbe, and Kampala is the business centre. The area is 93,981 sq.mi.; and the population (1931 census) was 3,556,267 Africans, and the estimated number of Europeans and Asiatics is 2,000 and 15,000 respectively.

Education for African boys begins in sub-grade schools, after which come elementary, lower middle, upper middle, and junior secondary schools, working finally up to Makerere college. Elementary schools are controlled and financed by district boards, assisted by native administration funds and in some cases by Government grants. Makerere college approximates to an East African Native University college. In Sept. 1937, a commission on the problem of education recommended the establishment of primary schools by the native administrations.

**Trade and Communications.**—Cotton is the chief agricultural product, the estimated export in 1936 being 330,000 bales. There is indication of the existence of rich minerals, and the export of tin in 1936 was 575 long tons. Uganda is linked in customs union with Kenya and Tanganyika; 1936 exports of the three territories were valued at £8,354,774, and imports at £7,377,279. There are 2,048½ miles of main roads maintained by Government, and c. 4,800 miles maintained by native administration. Roads are exceptionally good. The Cape-to-Cairo air service operates twice weekly from Entebbe. A new airport at Kampala was opened in July 1937. There are 330 route miles of railways under the Kenya and Uganda railways and Harbours Administration. The currency unit is the shilling, with subsidiary 50 cent silver coins and 10, 5, and 1 cent bronze. Revenue and expenditure for 1936 were £1,712,940 and £1,624,073 respectively.

**Ukrainians,** the most numerous of the Slavonic peoples, after the Great Russians, and one of the largest of all European peoples; easily the largest European people no part of which today enjoys complete national independence.

The chief home of the Ukrainians is the country north of the Black sea, where they inhabit a territory stretching from the Carpathians to the Don and beyond. This was the mediaeval Russian land, and received the name of "Ukraine" (= "frontier") only when the centre of the Russian power and population shifted northward under Tatar, etc., attacks.

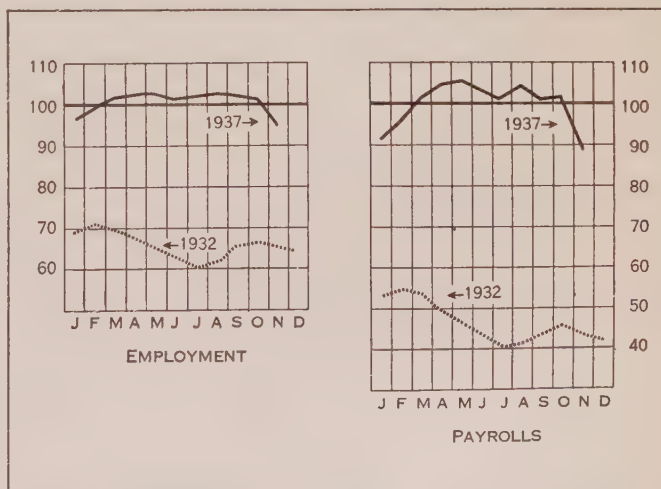
Then, too, Moscow began to claim to represent the true Russian stock, of which, it alleged, the Ukrainians or "Little Russians" were only a sub-branch. This brought about among the Ukrainians a counter-claim of a separate national identity and a movement towards national independence. The ideal of national unity was weakened by the fact that a large portion of the nation had come under Polish (later Austrian) sovereignty; had been absorbed by the "Uniate" churches (Eastern churches in communion with Rome); and had half-evolved a separate "Ruthene" nationality.

Today the Ukrainians of Europe live under four governments: in the U.S.S.R. (nearly 35 millions, chiefly in the Ukrainian Soviet Socialist Republic); in Poland (five to six millions); in the autonomous territory of Carpatho-Ruthenia, within Czechoslovakia (about 500,000); and in Rumania (about 500,000-600,000). There are also many emigrants in the U.S.A. and western Canada. Historical, religious, and political differences still divide the different branches of the nation, and in the peasant masses national feeling is still largely dormant; but in the future, the Ukrainian question will undoubtedly become a problem of the first magnitude. (C. A. M.)

**Ulster:** see GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF; IRELAND, NORTHERN.

**Unemployment** decreased substantially during the first three quarters of 1937 in the 28 nations for which statistics were available. Some countries emerged from the unemployment morass in which all were entangled during the early '30s; others reduced unemployment to a point where it was not serious. France, Denmark, the Netherlands, Austria, Great Britain, Poland, Canada, and the United States still faced troublesome unemployment situations, and the United States plunged into a business recession during the fall of 1937 which displaced more than a million people from their jobs before December 31.

The unemployment statistics of many nations are distinctly unsatisfactory and conclusions drawn from them are open to suspicion. The available figures are of two principal kinds, each gathered in several different ways; statistics of employment, i.e. of the number of people at work, and statistics of the number of people



FACTORY EMPLOYMENT AND PAYROLLS in the United States, by months, 1932 (....) and 1937 (—): Department of Labor indexes (average 1923-25=100)



in need of work. Employment statistics are derived from "establishment" reports collected by mail or through field agents or labour inspectors. Unemployment statistics are furnished by the employment exchanges (applications for work), unemployment insurance systems (applications for benefits), unemployment relief records, reports of trade union secretaries, and censuses of unemployment.

The various types of statistics agree reasonably well in their picture of what happened in the different countries during 1937, but not always upon the extent of the changes which occurred. In France and Canada, for instance, the employers' reports indicate more improvement in employment during 1937 than do the labour exchange figures, but in Czechoslovakia the labour exchange figures suggest more improvement in the employment situation than the establishment reports.

Great Britain and Northern Ireland started 1937 with fully three-fourths of their wage earners (nearly 13,000,000) under unemployment insurance. Of these, 1,676,966 were out of work in January, 1937. By June the number idle had decreased 291,334 to 1,385,632. Small reductions each month brought the unemployed down to 1,333,278 by September, with a typical seasonal increase of 61,128 in October. British unemployment during 1937 showed steady improvement over 1936 during the ten months for which figures were available. Starting in January with 11.2% of the insured population idle (1936 annual average was 11.3%), the unemployment percentage dropped to 8.7% in June and fluctuated between 8.5% and 8.9% from June through October. In 1929 8.2% (on the average) were totally unemployed and 2.2% on temporary layoffs. The first ten months of 1937 approximated the 1929 situation; and were in sharp contrast to the high figures of 1930-35. If the 4,750,000 not covered by the insurance act were included in the figures, the unemployment percentage would be more apt to fall than to increase, since military service, the police, civil service, teaching and other relatively stable occupations were in this group.

Registrations of unemployed persons at the employment offices of the Irish Free State increased five-fold from the pre-depression years to 1935. Moderate declines in unemployment in 1936 were followed by a sharp decline in 1937. During the summer and fall of 1937 unemployment appears to have been three times pre-depression levels and about 60% of 1936.

France and the Netherlands had similar records in 1937. Both experienced unusually severe unemployment in 1937. French unemployment reached its peak in 1935-36. The decline during 1937 (labour exchange registrations) was small. Approximately 340,000 of the 475,000 idle in 1936 were still idle in the summer of 1937. Employers' reports showed employment in the summer of 1937 at less than 80% of the 1930 level and man-hours worked at only two-thirds.

In the Netherlands unemployment reached its peak in 1935, when 36.3% of the workmen covered by unemployment insurance were idle (173,700). January 1937, found unemployment at these peak levels, improvement from which brought the unemployed percentage down to approximately 26% through the summer of 1937—ranging from 119,000 to 133,000 idle each month.

Belgium, in contrast, showed marked improvement in 1937. Substantial progress in re-employment in 1936 continued through the summer of 1937. The employment index approximated 90% (of 1929) during the first eight months of the year. Insured workers idle decreased from 14.5% in January to 9%, June-August. Days lost dropped from 3,881,345 in January to between 2,400,000 and 2,700,000, April-October. The number of unemployed was 163,039 in January; but 110,883 in August.

Denmark and Norway had a worse unemployment experience in 1937 than Sweden, judging from their statistics on trade union

unemployment (which are really inadequate to represent national situations). Denmark's percentage of trade unionists unemployed

was 21.1% through Aug., 1937 (1936=19.3%), Norway's through July, 20.0% (1936=18.8%), and Sweden's through August, 11.2% (1936=13.6). In the summer of 1937 the Swedish figures were moving to pre-depression levels, averaging 8%, but in Denmark the summer average was 14.7% and Norway 16.3%.

The German census of 1933 recorded 32,300,000 people in the employable population (including employers, farmers, etc.), of whom 5,900,000 were unemployed. The German sickness insurance figures report an average of 17,105,771 employed in 1936. Jan., 1937 showed 16,599,462, with an increase to 18,447,773 by April, 19,094,961 by July and 19,105,121 by September—a gain of 2,505,000 from January to September, a part of which was seasonal. The Federal Institution for Placement and Unemployment Insurance estimated that in 1936 the number of employees was 69.1% of the possible maximum: in the last quarter of 1936, 72.0%; in the first quarter of 1937, 74.3%; and in August, 76.6%. The low point of the depression was 41.9% in 1932. The average number of appli-



JOHN D. BIGGERS, prominent industrialist, who took the job but refused the salary for directing the special U. S. unemployment census, which indicated about 10,800,000 idle in November

cants at employment exchanges dropped from 2,052,483 in Jan. 1937 to 1,182,979 in April, the lowest figure since Sept. 1928. The decline continued until in Sept. the registrations were but 650,901.

Switzerland's employment exchange figures are unusually reliable measures of unemployment because both the relief act of 1919 and the unemployment insurance law require applicants to register at the employment exchanges. From 1927 to 1929, 2.2% of the employable population were wholly unemployed and 1.6% partially. For practical purposes, this is zero unemployment in any country. In 1929 an average of 8,131 applicants registered at the employment offices (out of about 2,000,000 employables). In Jan. 1937, the figure was 110,754. Month by month the registrations declined to a low of 49,244 in July; then increased gradually to 56,804 in October. The first ten months of 1937 witnessed a 50% decline in registrations for work, but there were still some 40,000 more workers idle than in 1929. The Swiss index of em-



ployment, based on establishment reports, rose from 72.2 in Jan. 1937 to 80.4 in Sept. (1929=100).

The Italian index of employment (1929=100) was down to 78.5 in 1932 and back to 94.9 in 1936. Jan.-March 1937 it was approximately 93, then rose to 106 by June. Taking into account the growth of population, these figures indicate employment in the reporting establishments approximated the 1929 level in the early summer of 1937.

Hungary's employment index and employment exchange registrations do not agree in their pictures of the Hungarian situation in 1937. The former showed employment in the reporting establishments to have approximated the 1929 level during the first half of 1937, even allowing for some growth of population. The latter reveal that there were two-thirds as many registered for work in 1937 as in 1932, when unemployment was at its worst.

Czechoslovakia and Yugoslavia both had a rapid improvement in employment in 1937. Starting 1937 at 75.1, the Czechoslovakian index climbed to 96.8 by June and remained approximately there through September, representing employment of approximately 2,400,000 people compared with 2,506,000 in 1929. Employment exchange registrations were, in 1933, 738,267, and 667,486 in Jan. 1937. After Feb., they declined rapidly to below 250,000, July-Oct. 1937, the lowest figure since 1930. In Jan. 1937, 12.9% of the insured workers drew unemployment insurance benefits; by August but 6.2%.

The beginning of 1937 found the employment index at approximately the 1929 level in Yugoslavia, but employment exchange registrations were high for such a situation. During the first eight months of 1937 employment improved steadily. By August some 115,000 more people were at work than the average for 1929 and the employment index reached 119.2 (1929=100).

The general trend of employment in the U.S., Canada and Mexico was upward during the first eight months of 1937. A sharp business recession in the U.S. displaced more than a million workers from their jobs between October 15 and the end of the year, and increased unemployment in the United States to more than 10,000,000, possibly above 11,000,000.

The United States took a special census of unemployment, Nov. 20, 1937, which recorded 7,822,912 as unemployed (2,001,877 of whom were employed on government relief work). This census was a voluntary report of individual citizens on forms left at all the homes by the postal service. Obviously many would neglect to send in the returns. Consequently sample tests were made on 1,455 mail routes to determine the margin of under-reporting. These tests indicated that a complete return might have shown as many as 10,800,000 idle on November 20. The true number was probably somewhere between the 7,822,000 reported and 11,000,-

000. To this must be added the late November and December layoffs, probably totalling more than 500,000. In the depths of the depression (1932-33) unemployment in the U.S. totalled from 13,500,000 to 14,500,000; the 1937 figure was discouragingly large when compared with the 1933 figure. Minimum unemployment for the U.S. would be about 2,000,000. The 1937 figures were increased, of course, by a growth of 5.7% in population in the U.S. between 1929 and 1936 coincident with a failure of the economic system to operate up to 1929 levels.

There were employed on Federal public works financed by other than "regular" appropriations, approximately 3,000,000 people in Jan. 1937, and the figure remained at this level through June, after which substantial reductions were made in relief employment, the figure dropping to 2,316,000 by September. Considering both emergency and regular public works, there was a shrinkage from January to September of 869,804 in the number of persons employed on Federal works designed principally to relieve unemployment. More than half of the increase in private employment in 1937 was counterbalanced during the summer by the layoffs from public works.

The American index of manufacturing employment was 8 points lower in Jan. 1937 than the 1929 average. By April it was but 2.6 points below 1929 and it remained substantially at that level through September. The October index was 100.5, the high point for the year. In November the index dropped 5.8 points, the biggest November decline since 1920. Up to November the 1937 indexes had been above the corresponding months of 1936, but in November the 1937 index fell to 94.7 (1936=96.9).

While employment exchange statistics are available for the U.S. the figures have been so profoundly influenced by relief, public works, and other governmental policies that they cannot be used without careful explanation of their gyrations.

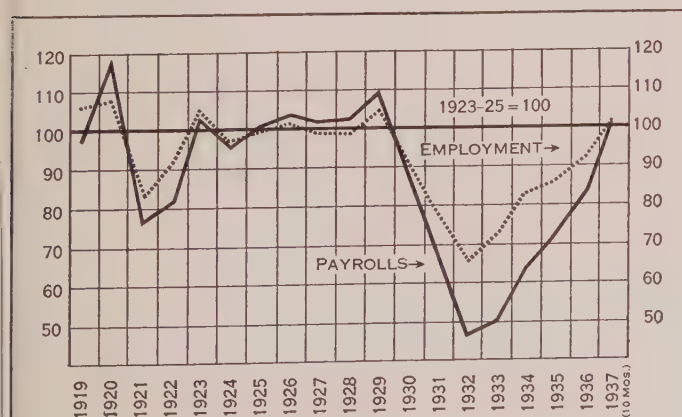
Canadian unemployment is measured in three ways; by employment office registrations, trade union returns, and monthly reports of employers. The three types of statistics all reveal the same general facts for 1937. Registrations at the employment offices averaged over 90,000 in 1936 compared with 14,996 in 1929. In January and February 1937 there were over 99,000 registered and in March and April over 100,000. From May to September, the numbers fell each month to approximately 77,000 in August and September. The figures indicate a definite decline in unemployment in the summer of 1937, but continuation of a large volume of unemployment.

The reports of union secretaries showed that from January to April 1937 approximately 14% of their members were idle. From May onward the percentage dropped to 7.7% in August and September, the lowest unemployment figure for any summer subsequent to 1930.

The employer returns showed average employment down to 70.6 in 1933 (1929=100), and up to 87.3 in 1936. In 1937, the employment index climbed steadily from approximately 87 in the first four months to 95.9 in May; 103.4 in August and 105.5 in September. Taking growth of population into consideration, the summer of 1937 saw unemployment approximating 1929 conditions, so far as the reporting industries were concerned.

The only figures on unemployment in Mexico are "official estimates." The figure given for 1930 was 75,695; for 1932, 339,378; for 1936, 186,906; and for the first four months of 1937, 187,357.

Japan was one of the nations with high employment in 1937, a by-product, of course, of war. Their employment index (1929=100) was 115.8 in 1936. It started at 119.6 in Jan. 1937 and rose to 129.1 by June. The government's official estimates of unemployment in 1932 estimate that but 6.8% of their employable population were idle, a figure hard to reconcile with an employment index of 82 that year. For January 1937, their unem-



FACTORY EMPLOYMENT (....) and payrolls (—) in the United States: Department of Labor indexes



ployment estimate was 333,331 (4.2%) and it had declined to 289,450 (3.8%) by May. The 1937 estimate checks better with the employment index.

The Union of South Africa, in direct contrast with most of the world experienced a comparatively slight decline in employment between 1929 and 1932—about 13%, and by 1936 her employment index was 25% higher than in 1929. In Jan. 1937 the index stood at 128.6, and reached 133 by April. It was above 131 in both June and July.

New Zealand's are entirely employment exchange figures. They indicate a gradual improvement in employment after 1934, with 1937 distinctly better down to August than any year since 1933. The numbers registered ranged between 34,000 and 37,800, January to Aug. 1937, compared with over 50,000 in 1936 and higher figures in previous years.

The only unemployment figures for Australia are compiled from reports sent in by union secretaries—a not very satisfactory type of unemployment statistics. The Australian trade union returns show 31,000 or 7% of the union workers unemployed (monthly average) in 1927; a figure which grew steadily to 120,454 (29%) in 1932 and then gradually subsided to 53,992 (12.2%) in 1936. The figures ranged downward in 1937 from 44,004 (9.9%) in February, to 43,584 (9.7%) in May, and 41,640 (9.3%) in August—a distinct improvement over any year since 1927.

The employment exchange registrations in Chile jumped from an average of 29,345 in 1931 to 107,295 in 1932, and then gradually dropped to 30,055 in 1934. Since then, applications for work have decreased sharply. Registrations were only 10,672 per month in 1935, 6,474 in 1936, and between 3,900 and 2,500 during the first six months of 1937, reflecting a high degree of employment in 1937. (See also SOCIAL SECURITY; NATIONAL INSURANCE: *Unemployment Insurance*; SPECIAL AREAS; UNITED STATES: *Social Security*.) (D. D. L.)

**Unemployment Insurance:** see NATIONAL INSURANCE; RELIEF; SOCIAL SECURITY.

**Unemployment Relief:** see RELIEF.

**Unfederated Malay States,** area 24,728 sq.mi., population (1931) 1,600,895, is one of the three main subdivisions of British Malaya (see articles, STRAITS SETTLEMENTS and FEDERATED MALAY STATES). They consist of six States, of which five, Johore, Kedah, Perlis, Kelantan and Trengannu, are located on the mainland of the Malay peninsula, while the sixth, Brunei, is on the island of Borneo. They are ruled by native sultans who have entered into treaty relations with the British Crown under which British advisers are appointed to the rulers. A number of British officials are employed in the service of the various States. Johore and Kedah are the most developed of the Unfederated States. There are Japanese iron concessions in Johore, which is on the mainland, opposite Singapore, and in Trengannu. (W. H. CH.)

**Union of South Africa:** see SOUTH AFRICA, UNION OF.

## Union of Soviet Socialist Republics

is bounded N. by the Arctic ocean; E. by the Pacific ocean, S. by the Black sea, Turkey, Iran, the Caspian sea, Afghanistan, India, China, Mongolia, Manchoukuo, and Japan; W. by Finland, the Gulf of Finland, Estonia, Latvia, Poland, and Rumania. The capital is Moscow (*q.v.*), and the national flag has a red ground with the hammer and sickle in gold in the top left corner; above them a five-pointed star bordered in gold.



"VOTIN' right today, Ivan?" The privilege of suffrage and the secret ballot in Russia, as seen by Hutton in the *Philadelphia Inquirer*

Cities of over 500,000 inhabitants are: Moscow (1936) 3,567,900, Leningrad (1935) 2,739,800, Baku (1935) 670,000, Kiev (1935) 625,000, Kharkov (1935) 625,000, Tashkent (1935) 532,000, Gorky (formerly Nizhny Novgorod) (1935) 512,000, Odessa (1935) 509,000.

**Area and Population.**—Area: 21,514,000 sq.km.; population (1937): 180.7 millions (43% born after the revolution), of which 46.1 millions (25%) is urban and 134.6 millions rural. In 1926, Russians were about 53% of the population, Ukrainians 21.2%, White Russians 3.2%, Kazakhs 2.7%, Uzbeks 2.6%, Tartars 1.9%, Jews 1.7%, Georgians 1.2%. The social composition in 1937 was: workers and employees 34.7%, collectivized peasants and co-operative craftsmen 55.5%, individual peasants (other than Kulaks) and craftsmen 5.6%, other sections of population (students, army, pensioners, etc.) 4.2%. According to article 124 of the Constitution, freedom of religious worship and freedom of anti-religious propaganda are recognized for all citizens. In language, the population of the U.S.S.R. belongs to the following groups: Indo-Europeans, Caucasians, Semites, Finno-Ugrians, Samoyedes, Turks, Mongols, Tungus, Palaeoasiatics, and the Far Eastern civilized population (Chinese, Japanese, etc.). The press of the U.S.S.R. is published in 69 languages, books in 111. On the stage, 45 languages are used. According to article 121 of the Constitution, the citizens of the U.S.S.R. have the right to education. This right is ensured by universal compulsory elementary education, free of charge. The total number (1936-37) of kindergartens was 23,600, and of elementary and secondary schools 163,729. In 1935-36 there were 716 workers' faculties and 2,572 technical colleges; universities and higher schools totalled 700 in 1936-37, and during that period the total number of pupils of elementary schools was 10,970,000; of secondary schools 17,093,-



000; and of adult schools 8,944,000. There were 551,000 university students (including 443,500 with State grants).

**History.**—In the course of 1937, with very few exceptions (e.g. Voroshilov and Litvinov), nearly all the Peoples' Commissariats of the Union changed their chiefs through death, dismissal or imprisonment. In most cases their places have been taken by younger adherents of Stalin hitherto hardly known. On Aug. 22, a new All-Union Commissariat for machine building was created, and, on Dec. 30, beside the Defence Commissariat, a separate Commissariat for war and naval affairs was set up. The Permanent Economic Council, formed on Nov. 23, is to include among its activities the planning of national economy, and the consideration of questions connected with prices, labour, wages, etc.

**Constitution and Elections.**—The year 1936 ended with the adoption of a revised Constitution by the Eighth Extraordinary All-Union Congress of Soviets in Moscow on Dec. 5, a day which has been declared a public holiday in the Soviet Union. According to the new Constitution, the Soviet Union as a federal State includes 11 (formerly 7) Union Republics: the R.S.F.S.R., the Ukrainian S.S.R., White Russian S.S.R., Azerbaijan S.S.R., Georgian S.S.R., Armenian S.S.R., Turkmen S.S.R., Uzbek S.S.R., Tajik S.S.R., Kazakh S.S.R., Kirghiz S.S.R.—which in their turn are formed from autonomous republics and provinces, territories, regions, districts, etc. The highest organ of State power of the Union is the Supreme Council, with its Presidium and two chambers of equal standing elected by the people for four years—the Council of Union and the Council of Nationalities. Legislative power belongs exclusively to the Supreme Council, and to it is also accountable the Council of Peoples' Commissars, the highest executive and administrative organ of State power in the Union. It is the prerogative of the whole Union to conduct international relations, the support and changing of the Constitution, organization of the defence, and the direction of all armed forces, foreign trade, planning of national economy and of the unified State budget, administration of banks, of industrial and agricultural establishments and trading enterprises of All-Union importance, transport and communications, establishment of basic principles in the field of education, public health and labour legislation, the working out of criminal and civil codes, and the issuing of All-Union acts of amnesty. For the rest, the separate Union Republics are Sovereign. They have their own constitutions, Supreme Councils, and Councils of Peoples' Commissars, and retain according to Article 17 even the right of free withdrawal from the Union. The holders of local State power in the territories, autonomous provinces, districts, cities, and villages are the Soviets of Working Peoples' Deputies.

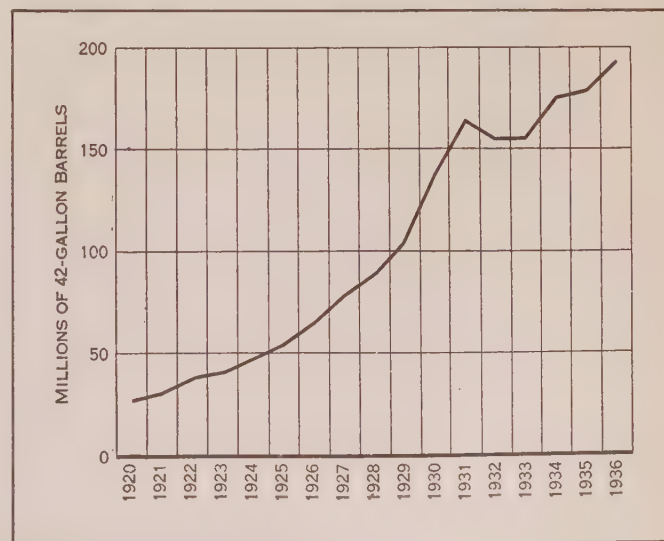
The new Constitution guarantees to Soviet citizens in the future freedom of speech, of the press, of meetings, of processions, the right to unite in public organizations, inviolability of person and homes, secrecy of correspondence, the right to work (with payment in accordance with quantity and quality), the right to rest (7-hour working day, annual holidays with pay), the right to material security in old age and to education, and the equality of all, independent of sex, nationality, and race. The right of citizens' personal property in savings, dwelling-house, household articles, etc., as well as the right to inherit such property, is expressly ensured. According to Article 7, every collective farm household shall have for personal use a plot of land attached to the house, and as personal property the subsidiary husbandry on the plot. A small-scale private enterprise of individual peasants and craftsmen based on personal labour is allowed, provided there is no exploitation of the labour of others (Art. 9).

In the first months of 1937, in all the Union Republics extraordinary Soviet Congresses took place, at which the separate Consti-

tutions of the Union Republics were adapted to the new All-Union Constitution. On March 14, thousands of previously disfranchised Soviet citizens were automatically re-established in their rights, and on July 9, the Central Executive Committee of the U.S.S.R. adopted the rules for elections to the Soviet Supreme Council, in consequence of which all Soviet citizens of 18 years and upwards, including the Red Army, and excluding insane persons, received the right, irrespective of sex, race, nationality, religion, and even social origin or past activity, to take part in the elections and to be themselves elected. The elections themselves were to be universal, equal, secret and direct. After the end of October, a flood of mass meetings took place in the towns and villages of the whole Soviet Union, at which the candidates for the Supreme Council were nominated. The leading personalities of the Union thereby claimed first honours. With the help of the whole apparatus of propaganda, the Moscow Government sought to ensure a 100% electorate, to show the "foreign Fascists and their agents that a united people stand behind the Red Army." And, in fact, 96.8% of the over 97½ million franchised persons voted on Dec. 12 in the elections for the Supreme Council, although no other possibility was given the voters but to vote for the unopposed official nominee presented for each single-member constituency. The total number of deputies elected was 1,143, including 855 communists and 184 women. Socially, the new Russian "Parliament" consists of 55% officials from party and government; 7½% from the ranks of the army and navy, 30½% workers and peasants, and 7% "Intelligentsia and Illustrious Citizens."

**Domestic Affairs and Legislation.**—On Feb. 27, the Central Committee of the Communist party decided on the immediate conduct of secret and direct re-election of party officials in all party organizations, and the liquidation of the former practice of "co-option." And at the beginning of March, in two speeches much commented upon, Stalin himself subjected the increasing bureaucratization of the party to a devastating criticism, and demanded from it a closer contact with the masses of the people. At the elections held by secret ballot in the following months, a large number (35 in Moscow) of former party secretaries lost their posts.

Another highly important feature in the internal political development of the Union, which in November solemnly celebrated the 20th anniversary of the Bolshevik Revolution, was the struggle, ruthlessly carried out in 1937, against all real or only possible opposition elements, and those suspected of sympathy



CRUDE PETROLEUM PRODUCED in U.S.S.R.



with Trotsky, in the party, administration, and army. The year began with a sensational trial against 17 leading Communists, including Pyatakov, former vice-commissar for heavy industry, Radek, the mouthpiece of the Kremlin in foreign affairs, and Sokolnikov, former ambassador to Great Britain, who, according to the indictment, had sought, on the instigation of Trotsky, to overthrow the Government, in order to re-establish capitalism in the U.S.S.R., and had promised to Germany and Japan, in exchange for their support, considerable territorial compensation (Ukraine, Amur Territory) as well as great economic privileges and concessions. In order to hasten the removal of the Soviet Government, these former Communist leaders were said to have followed a policy of espionage, wrecking, and terror. All the accused fully admitted their guilt and made exhaustive confessions. On Feb. 1, 13 of them—Pyatakov, Muralov, and others—were shot, the remaining four, including Radek and Sokolnikov, were sentenced to periods of imprisonment ranging from 8 to 10 years. On March 5, Bukharin, the former chief editor of the official *Izvestia*, and Rykov, former chairman of the All-Union Council of People's Commissars, were expelled from the party for counter-revolutionary activities. Great excitement was caused then by the arrest, at the beginning of April, of the all-powerful Yagoda, the General Commissar of State Security, on account of the "discovery of criminal activity." On May 31, Gamarnik, the "basest and most dangerous Trotskyist," the first vice-commissar for defence, took his own life, and—a great shock for public opinion abroad—Marshal Tukhachevsky, together with seven other highly placed men of the Red Army, after a four-day secret trial by court-martial, was condemned to death and shot on June 12, having been found guilty of betraying military secrets to Germany, undermining the power of the Red Army, and preparing a military defeat with a view to the partition of the U.S.S.R.

On Dec. 19, one week after the elections to the Supreme Council, the shooting of eight more highly placed Soviet officials, including Karakhan, former ambassador to Turkey, and Yenukidze, Stalin's one-time right-hand man and secretary of the Central Executive Committee of the Union, was announced. Also the religious revival several times mentioned in the Russian Press, called forth oppressive measures by the Government against the clergy. The purge against Trotskyists and the hunt for "enemies of the people and socialism," "traitors to the Fatherland," wreckers, agents of Fascism, and spies was not, however, confined to the above-mentioned cases, but was carried out systematically throughout the Union and operated in all departments of public, economic, and cultural life.

On Jan. 6, a census was taken which, however, in September was declared invalid "owing to the violation of the most elementary principles of statistics." A new census is to be taken in Jan. 1939. According to the declaration of the Government on April 28, the second Five-Year Plan was completed on April 1 well ahead of schedule with regard to the main branches of national economy, and on the same day a decree was published reducing retail prices of different goods from 5 to 16%. According to the economic plan for 1938 announced on Nov. 29, the value of the gross output of all industries is to be increased by 15.3% over 1937, while the production costs are to be reduced by 1.9 to 5.4%. On Nov. 2, the wages of the lower-paid categories of workers were increased to 115 roubles per month as a minimum for those working on a time basis, and 110 roubles per month for those on a piece-work basis.

In Feb. 1937, the Red Army received new field service regulations, and on May 16 military councils were placed at the head of each military area, as supreme representatives of military authority. These have to bear full responsibility for the political and moral conditions and mobilization efficiency of the military

units within the area. In summer, a new defence loan was floated for an amount of 4,000 million roubles, and within two months was heavily oversubscribed.

In the cultural realm, noteworthy events are the increase in teachers' salaries (January) and in student scholarships (November), the full re-introduction of scientific degrees and ranks (March), closing of all "model and experimental schools" (April), and the measures taken for improving the teaching of foreign languages (September).

Soviet aviation in 1937 can point to a number of spectacular successes, especially in the Arctic.

**Foreign Relations.**—In foreign policy, in spite of repeated rumours of isolation tendencies in the Kremlin, the Soviet Union in 1937 continued to co-operate with the League of Nations, the Disarmament Bureau, and capitalistic countries. The basic principles of Soviet foreign policy were formulated by Litvinov in a reply to the American Secretary of State, Mr. Cordell Hull, in August, as follows: the indivisibility of peace and collective security; the necessity of avoiding force in pursuit of national policy; the adjustment of international problems by peaceful negotiation; the faithful observance of international agreements; complete general disarmament, and the organization of a permanent peace conference. The Union has co-operated in the Spanish non-intervention committee, and took part in September in the anti-piracy conference at Nyon and in the Nine-Power Conference on the Far Eastern crisis in Brussels in November. Soviet foreign policy was further based on mutual assistance pacts with France and Czechoslovakia. Relations with the other members of the Little Entente have not, however, improved appreciably. Yugoslavia continued to refuse recognition of the Soviet Government, and the Soviet Union could not see its way to recognize the incorporation of Bessarabia into Rumania. Relations with Germany and Japan, who in Nov. 1936 signed an anti-communist pact, have continued to be very tense. The long-established air-line connecting Moscow with Berlin was in the summer finally suspended. It also proved impossible to settle the questions outstanding between Japan and the Soviet Union, such as the revision of fisheries treaty, demarcation of the Siberian-Manchoukuo frontier, conclusion of a non-aggression pact, etc. At the end of Dec. 1937, the old Fisheries Convention of 1928 was extended for one year only. The relations of Moscow with Italy also had in 1937 some tense moments. The Soviet Government's making Italy responsible for the sinking of Soviet merchant ships in the Mediterranean in September, and the adherence of Mussolini to the German-Japanese anti-communist block in November, led to an exchange of sharp notes with Rome, though not to the breaking off of diplomatic relations.

Relations with Great Britain remained thoroughly friendly. On July 17, the U.S.S.R. signed a bilateral naval agreement with Great Britain; and only reserved special rights with regard to her Far Eastern fleet. In the middle of November, it was stated in the House of Commons that the whole financial credit of £10 million granted to the U.S.S.R. by the British Government in July 1936 had been utilized for purchasing British goods. On Aug. 4, after long negotiations, an important new trade agreement was concluded with the U.S., by which the Soviet Union, in exchange for the granting of unconditional most-favoured nation treatment, pledged itself to purchase during the next 12 months American goods to the value of at least \$40,000,000. On July 29, a U.S. warship visited a Russian port, Vladivostok, for the first time since the revolution. On Aug. 21, China and the U.S.S.R. signed a 5-year treaty of non-aggression, in which both pledged themselves "to refrain from any attack upon each other, whether singly or in conjunction with one or several other Powers." The reported cooling in relations between Turkey and the



Soviets was contradicted by the visits to Moscow in July of the Turkish ministers of the interior and foreign affairs. The signing of a new trade agreement with Turkey followed on Oct. 8. Russia was specially active in 1937 in her policy with regard to the Baltic countries. Courtesy visits of the foreign ministers of Finland, Latvia, and Sweden to Moscow made it possible to establish relations with these countries on a firmer foundation.

In the Spanish question the Soviet Government, both at the non-intervention committee in London and at the League Assembly in Geneva, sought by all diplomatic means—although not always with success—to uphold the rights and interests of the Republican Government of Spain. On Jan. 22, the U.S.S.R. agreed to the decision of the non-intervention committee prohibiting the enlistment, departure, and transit of volunteers to Spain. At the anti-piracy conference in Nyon in September the patrol of the Black sea was entrusted to the Soviet Government. And on Nov. 16, the U.S.S.R. accepted with great reluctance the proposal for granting belligerent rights to both sides in Spain after "substantial" progress in the withdrawal of foreign troops. Many thousands of Spanish refugee children have been received in the U.S.S.R.

**Trade and Communications.—Agriculture.**—Figures published in May 1937 showed that there are 1,627,367 sq.mi. of agricultural land, of which 1,431,635 sq.mi. belong to collective farms and individual peasant farmers and 195,732 sq.mi. to State farms. The sown area in 1937 was 522,000 square miles. Ninety-three per cent of the peasant households are collectivized. Preliminary returns for 1937 show the year's total output of land produce as 16.6 milliard roubles, and of animal produce 6.4 milliard roubles. Over 117 million tons of grain and over 21 million tons of sugar beet were produced. In 1936, the yield of raw cotton was 23,900,000 centners, and of flax 5,300,000 centners.

**Natural Resources.**—Approximate production figures: coal, 1,200,000 million tons; oil, 3,200 million tons; iron ore, 10,778 million tons; manganese ore, 709 million tons; copper, 17,073,000 tons; lead, 4,124,000 tons; zinc, 9,932,000 tons. 3,525,190 sq.mi. are under timber.

**Commerce and Industries.**—In 1936, the retail State trade was 80 milliard roubles; co-operative trade 26.9, and collective farms and peasant trade 15.6 milliard roubles. The turnover of foreign trade from Jan. to Sept. 1937 showed: exports, 1,218,549,000 roubles; imports, 1,012,761,000 roubles. Over 376 million roubles represent exports to Great Britain, and over 107 million roubles exports to the U.S. Further particulars relating to exports (Jan.-Sept. 1937) are: industrial goods 72%, agricultural 28%; timber 321,790,000 roubles, textiles 180,727,000 roubles; mineral fuels, 141,893,000 roubles; furs, 139,440,000 roubles; grain, 95,856,000 roubles. Nearly 92% of the imports were goods for industrial purposes, the principal imports being (Jan.-Sept. 1937, thousand roubles): machinery, equipment, and electrical materials, 280,574; non-ferrous metals, 205,877; textiles, 130,380; ferrous metals, 80,495. The principal sources of imports were (thousand roubles) U.S., 184,157; Germany, 180,318; Great Britain, 145,324. The value of orders placed by the Soviet Trading Organizations in Great Britain (Jan.-Oct. 1937) was £18,364,479. Principal exports from the United Kingdom to the U.S.S.R. were non-ferrous metals, rubber, machinery, and wool; and principal imports from the U.S.S.R. to the United Kingdom were gold, timber, furs, and grain.

Industrial output was as follows: (Jan.-Oct. 1937, thousand tons): coal, 100,880; steel, 14,680; pig-iron, 12,080; rolled metal, 10,720; (Jan.-Dec. 1936) oil, 29,293; electric power, 32,800 million kw. hours; gold (private estimate), 7,350,000 fine ounces. Light industries were represented by (1936 figures, in million metres): silk, 52; cotton, 3,299; wool, 98; linen, 286. From Jan.

to Nov. 15, 1937, 1,650,000 tons of fish and 1,190,000 tons of sugar were produced. The value of the industrial output for the first half of the year (at prices 1926-27) was, in million roubles: heavy industry, 17,917; light industry, 6,995; food, 5,207; timber, 1,457.

**Transport, etc.**—In 1937, there were 86,500km. of railway lines; and during 1936 the railways carried 991.6 millions of passengers and 483.2 million tons of freight. Ninety-five per cent of foreign trade was shipped by sea, and in 1936, 28,646,900 tons of cargo and 2,791,000 passengers were carried in 1,467 chartered foreign ships. Several powerful new ice-breakers were launched at the Leningrad shipyards in 1937. The length of river routes in 1937 was 110,000km., and the Moscow-Volga canal was opened during the year. (The White Sea-Baltic canal was opened in 1933.) Between 1931 and 1935, 185,000km. of new roads were built; and there are at present under construction a 16-metre wide road from Moscow to Kiev (866km.), and one from Moscow to Minsk (655km.). The number of motor vehicles in 1937 was 585,000. There are 54,000km. of air lines, carrying (Jan.-Sept. 1937) 20,838 tons of freight, 3,753 tons of postal packets, and 123,793 passengers. Moscow is connected by air with the following: Vladivostok, Tbilisi (Tiflis), Tashkent, Riga and Stockholm, and Kiev and Prague. There were, in 1936, 71 radio stations. In 1937, three new automatic telephone exchanges were installed in Moscow and one in Leningrad, and further exchanges are under construction in 47 cities.

**Finance and Banking.**—The currency units are the rouble, and the chervonetz of 10 roubles; the exchange value of £1 sterling in 1937 was 26.25 roubles. On Jan. 1, 1937, banknotes issued for circulation were to the value of 802,032,172 chervontzy; treasury notes 2,800,400,000 roubles. The gold reserve was estimated at the end of 1936 at about £236 million. Budget estimates for 1937 were: total revenue 98,069,500 thousand roubles; total expenditure 97,119,500 thousand roubles, of which approximately 27% is apportioned for culture and social purposes, and 20% for defence. Taxation estimates for 1937 (in thousand roubles): turnover tax, 76,795,400; profit tax, 6,304,175; income tax and other taxes from enterprises and organizations, 972,905; agricultural tax from collective farmers and individual peasant households, 650,000. According to Article 14 of the Constitution, the administration of banks comes under the jurisdiction of the U.S.S.R.

**Main Soviet Banks:** the State bank of the U.S.S.R. and its branches; Long Term Credit bank for industry and electrification (Prombank), the All-Union Trade bank (Vsetorgbank); the Central Agricultural bank (Selkhozbank); the Central Municipal and Housing bank (Tsekombank). In savings banks were deposits (1936) of over 4,000 million roubles. Statistical research work is concentrated in the Central Bureau of National Economy Accounting (Tsunkhu) of the All-Union State Planning Commission (Gosplan), which gets regular reports from each administrative, industrial, and agricultural body and from all other bodies and organizations.

**Defence Forces.**—Universal military service lasts 2-4 years. The conscription age is 19 years by January of the conscription year. There are eleven military areas. In 1936 the numerical strength of all services was 1,300,000. There were 13 military academies (16,000 students), and 6 military colleges attached to universities. There are Baltic, Black sea, Northern, and Pacific fleets. No accurate statistics are available. The *League of Nations Armaments Year Book* for 1937 gives the following data for 1936 taken from unofficial publications: 4 battleships (93,786 tons); 7 cruisers (49,854 tons); 32 destroyers (34,793 tons). A new 3,500-ton destroyer, "Tashkent," built in Italy, was launched on Nov. 21 at Leghorn. The number of submarines is estimated



variously from 38 to 175. Of the infantry units of the army, 77% were in 1936 regular divisions, and 23% territorial divisions. There were also mechanized units and cavalry units. No official figures are published for the air force. Private estimates vary between 4½ and 5½ thousand military planes (including bombers, fighters, reconnaissance crafts, etc.). The Worker's and Peasant's Militia numbered 110,000 men in 1933; special troops of the People's Commissariat for Internal Affairs 45,390; escort guards 13,200; and customs guards, 1,800. (See also ARMIES OF THE WORLD; INTERNATIONAL LAW: *Private Property*; WATER POWER; WORLD ARMAMENTS.)

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**Unitarian Church.** A commission of appraisal, consisting of eight educational and religious experts, surveyed the Unitarian Church in America and their findings were published in 1936 under the title "Unitarians Face a New Age." In May, 1937, the chairman of the commission, Dr. Frederick May Eliot of St. Paul, Minn., was elected president of the American Unitarian Association, and re-organization of the denomination along various lines suggested has begun. Opponents of the recommendations of the commission attempted to fight the election on doctrinal grounds, raising the issue of theism vs. humanism. The genius of Unitarianism as a non-doctrinal, free religious organization, displayed itself by the almost unanimous refusal of both theists and humanists to recognize any such issue.

A new office of national significance was created, that of moderator, to preside at conferences and represent the denomination throughout the country. Hon. Sanford Bates, former commissioner of correction for the State of Massachusetts, and superintendent of Federal prisons, now president of Boys' Clubs of America, is the nominee for election in May, 1938.

The International Association for Liberal Christianity and Religious Freedom, which joins Unitarians and other liberals in all countries, met in conference in Oxford, England, in Aug. 1937. Twenty-two countries were represented through delegates. Dr. Louis C. Cornish of Boston, formerly president of the American Unitarian Association was elected president to succeed Dr. Alfred Hall of Sheffield, England. Regional conferences will be held hereafter in various parts of the world in the years intervening between the triennial meetings of the congress. (J. H. L.)

**United Church of Canada** entered the year 1937 confident in the ideal and purpose which over twelve years ago brought about the union in Canada of Methodist, Presbyterian and Congregational Churches. Among the important features in the life of the United Church during the year were the setting up of a strong commission to study the problem of the downtown city church, the first meeting of the Council of Theological Education to raise still higher the standard of theological colleges, the creation of an Economic and Social Research Commission, the visit of Rev. R. B. Cochrane, D.D., as fraternal delegate to the British Churches overseas, the attendance by royal request of the moderator, the Right Rev. Peter Bryce, D.D., at the Coronation, the opening up of mission fields in the new mining areas of Canada, the attendance of nine delegates at the Oxford and Edinburgh Conferences, and an arrangement with the Baptist denomination to use United Church Sunday School publications.

In addition to the missionary and maintenance givings during the year of over \$1,500,000, the United Church raised \$10,000

to aid famine-stricken areas in China and India. Over \$55,000 was subscribed to give special help to ministers stationed in the dried-out areas of Saskatchewan; 5,000 bales of clothing were sent to the West, and, in conjunction with other denominations, 830 carloads of fruit and vegetables were shipped to the same area.

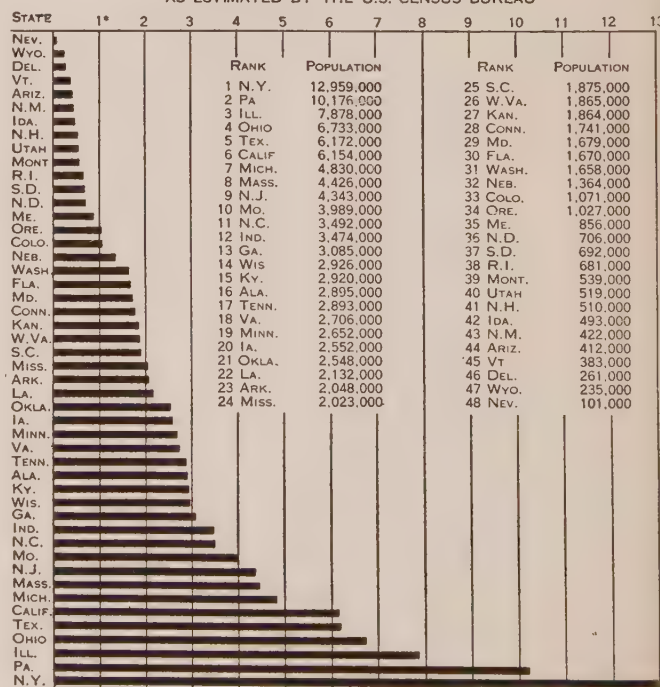
In June the Pan-Presbyterian Council, of which the United Church is a constituent member, elected as its president for the next four years Rev. Robert Laird, D.D., treasurer of the United Church. After his election Dr. Laird left to visit the extensive foreign mission fields of the church in India, China, Korea and Japan. The United Church is also a constituent member of the Ecumenical Methodist Conference, holds the same relationship to the International Congregational Council and is an associate member of the Federal Council of the Churches of Christ in America. (G. A. SL.)

**United Kingdom:** see GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF.

**United States.** The United States Bureau of the Census estimated the number of inhabitants on July 1, 1937 at 129,257,000. This marked an increase of 820,000 over July 1, 1936 and of 5,482,000 over the 1930 census. Population figures for individual States may be found in the accompanying table and in the separate State articles. See also the articles BIRTH STATISTICS; CHURCH MEMBERSHIP; DEATH STATISTICS; EDUCATION; ILLITERACY; INDIANS, AMERICAN; NEGROES (AMERICAN); POPULATION, MOVEMENTS OF AND UNIVERSITIES AND COLLEGES for statistical information of social conditions. (X.)

**History.**—The endorsement of the first Roosevelt administration by the people of the United States at the polls on Nov. 3, 1936, was emphatic. The president carried every State in the Union except Maine and Vermont against his Republican opponent, Governor Alfred M. Landon of Kansas, and received 523 of the 531 votes of the electoral college. Of the 45,514,968 voters who went to the polls (as against 39,763,589 in 1932) more than 27,000,000 cast their ballots for the Roosevelt electors. How far

COMPARATIVE CHART OF  
STATE POPULATION JULY 1, 1937  
AS ESTIMATED BY THE U.S. CENSUS BUREAU



\*FIGURES REPRESENT MILLIONS TOTAL POPULATION OF THE UNITED STATES INCLUDING THE DISTRICT OF COLUMBIA: 129,257,000



this decisive victory was due to the personal charm and persuasiveness of the president, and how far to sympathy with the fundamental policies of the New Deal would be difficult to say. William Allen White, the "sage" of the *Emporia Gazette*, whose mellowed wisdom is a proverbial asset of American political thought, gave perhaps the best summary of the significance of the election. It marked, he wrote, "a firm desire on the part of the American people to use the Government as an agency for human welfare . . . from this November day on we should have a new America, an America in which at least for four years the Federal Government should be the strong coercive arbiter between those who have and those who have not . . . we are walking down a strange highway, but we have deliberately chosen to go that path. Our eyes are wide open. We know what we need, and neither courts nor constitution nor ancient tradition can hold us here at the turn of the road. We are going on a great new adventure . . . as the old hymn lines it out, it is 'a grand and awful time.'"

The first session of the 75th Congress met on Jan. 5, 1937. The Senate contained scarcely a dozen determined opponents of the administration, for, in addition to the 76 Democratic members (some of whom had to find seats on the Republican side of the chamber), there were several nominal Republicans, like Norris of Nebraska, Nye of North Dakota and Johnson of California, who generally supported the measures of the New Deal. In the House the Democrats, with 334 seats out of 435, had the largest majority that any party had commanded since 1855. William Bankhead of Alabama was elected speaker of the House, with Samuel Rayburn of Tennessee as floor leader. Joseph T. Robinson of Arkansas continued as leader of the Senate till his death on July 14, when he was succeeded by Alben Barkley of Kentucky. What attitude the president, invested anew with a tremendous grant of power, would take toward the pressing problems of the day was a matter of considerable speculation. He had not always been consistent (and, indeed, had not claimed to be) in his policies, though holding firmly to his objectives. For example, in his last speech of the campaign of 1936 he had declared that he "had just begun to fight" for his comprehensive program of crop control, conservation, crop insurance, abolition of child labour, slum clearance, shorter hours and higher wages in industry, collective bargaining, cheaper electricity, social security, and a number of other measures. Yet he had intimated at times that the fight was well nigh won and that the protesting business interests might look forward to a "breathing spell." The annual message which the president read to the newly assembled Congress, however, left no doubt that he intended to go on with his fight for social justice. He dealt with a number of dangerous or deplorable conditions confronting the people, such as the lack of proper housing, the prevalence of farm tenancy, continued unemployment, the abuses of monopoly, inadequate wages, and the threat of foreign war; and declared that there must be a strong and alert government to cope with these problems. "The most far-reaching and most inclusive problem of all," he said, "is that of unemployment and the lack of economic balance, of which unemployment is at once the result and the symptom." While business recovery had mitigated the distressing situation of 1932 and 1933, still, with some 8,000,000 willing workers out of a job, the Government could not be justified in "placing the unemployment problem in a filing cabinet of unfinished business." Nearly half the American people were unable to maintain themselves in health and comfort because of inadequate incomes, while we had "ample resources in the country." The aim of Government should be so to distribute the product of industry that "all willing and competent persons will be able to live comfortably." A very large order!

**Congress.**—The results of the more than seven months of

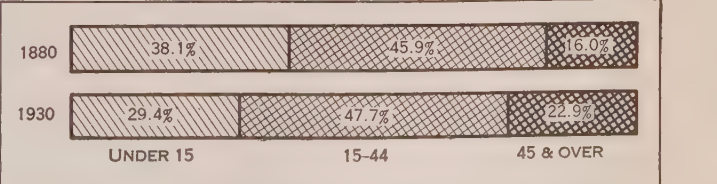


PRESIDENT ROOSEVELT reviewing his second inaugural parade from an especially built stand that was a replica of Andrew Jackson's famous home, the "Hermitage"

debate in the Congress which sat from January 5 to August 21 were so disappointing as to elicit from many critics the reproach that it was a "do-nothing" Congress. The meagre accomplishments of the session were due partly to a split in the unwieldy Democratic majority between those who supported the president's go-ahead policy and those more conservative members who believed that the time had come to call a halt in the New Deal program; and partly to a bitter struggle over an unexpected bill which the president sent to Congress on February 5, calling for a drastic reorganization of the Supreme Court and the inferior Federal courts (*see SUPREME COURT OF THE UNITED STATES*). In spite of the fact, however, that the major proposals of the president were either defeated, like the Supreme Court bill; or ignored, like the plan for the reorganization of the executive departments, the establishment of six regional power systems on the model of the Tennessee valley authority, and legislation for crop control; or left hanging in the air, like the bill to regulate hours and wages, the confused and contentious session may be credited with some positive results. A Neutrality Act (*see*

DEATHS IN 1935 IN WHITE POPULATION OF U. S. A.: 1,207,359	LIVES SAVED BY IMPROVEMENT IN MORTALITY SINCE 1900: 768,402
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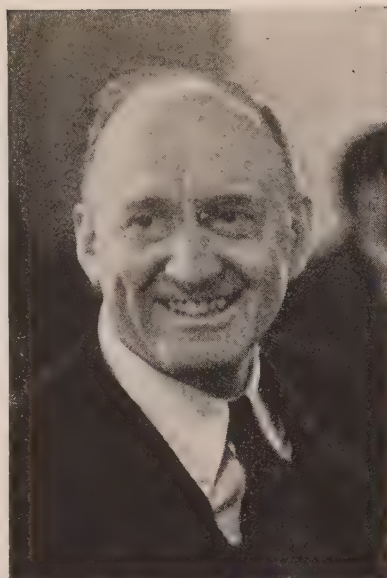
IF THE MORTALITY RATE of 1900 had prevailed in 1935, there would have been 1,975,761 deaths (full length of bar) in the white population of the United States instead of 1,207,359. (Metropolitan Life Insurance Company: *Statistical Bulletin*, November 1937)



INCREASE IN AGE of the population of the United States in half a century



below, under *Foreign Affairs*), signed May 1, provided for the procedure and the machinery which it was hoped would keep the United States out of war. The Guffey-Vinson Coal Act, approved on April 26, replacing the Guffey Coal Control Act which had been declared invalid by the Supreme Court a year before on account of its wage clauses, regulated the production of bituminous coal entering into interstate commerce; thus salvaging to a great degree the principle of the "little NRA." A beginning at least was made



HENRY MORGENTHAU, JR., U. S. Secretary of the Treasury

in the relief of the farmer tenants (who comprise more than 40% of the farmers of the country) by the passage and approval in July of the (Bankhead) Farm Tenancy Act, which provides for a Federal loan of \$10,000,000 for the first year, \$25,000,000 for the second, and \$50,000,000 for each succeeding year, to enable farmers to buy their land. The loans are to be administered through the Farmers' Home Corporation (superseding the Tugwell Resettlement Administration) and are to run for 40 years with interest at 3%. At the same time Congress overrode the president's veto of an act extending the  $3\frac{1}{2}$  and 4% interest rate on the old loans of the Federal land banks. It is true that the relatively small appropriations of the Farm Tenancy Act will make it possible for only a very tiny percent of the 3,000,000 tenants in the country to buy their own farms; but it is at least a gesture in the right direction.

Another important relief measure which occupied the attention of Congress was Federal aid in providing decent homes for the 75% of American families whose income is less than \$2,000 a year (see HOUSING). Due to the depression and to the high prices of material and labour that followed, there was an alarming shortage of houses and apartments for rental at the cost of not more than \$6 a month, and a consequent alarming growth of the slum population, with all the evil effects of the same on the health and morals of the community. Bills sponsored by Senator Wagner of New York and Representative Steagall of Alabama resulted in the Housing Authority Act (signed by the president on September 2), by which the Federal Government was empowered to loan to States, counties, or cities \$100,000,000 the first year and \$200,000,000 in each of the two following years for the construction of low-rent houses and apartments. Cash subsidies, limited to \$20,000,000 a year, were to be granted to the owners of such buildings to compensate them for losses on the low rentals; but the grants were available only in case the new building replaced a slum dwelling. It was realized that the Housing Act would not provide for more than about 350,000 units in three years, whereas millions of low-rent homes were needed. The president, in fact, in a special message to the extra session of Congress (November 29), called for a \$16,000,000,000 drive by private interests to build the 3,000,000 low-rental houses needed to bring our living standards up to the level of 1930; and at the same time suggested changes in the Housing Act for the reduction of interest rates on the F.H.A. loans. New Wagner-Steagall housing bills were passed by both Houses in December, just before the adjournment of the

extra session, and, as the year closed they were awaiting final formulation by a conference committee.

In addition to the measures noted above, the first session of the 75th Congress made provision for the continuance of the C.C.C., and the reciprocity pacts negotiated by Secretary Hull, and appropriated the \$1,500,000,000 asked for by the president for relief. A Railroad Retirement Act extended the social security system to about 1,500,000 railway employees. A Sugar Act empowered the secretary of agriculture to limit imports of sugar from foreign countries and from Hawaii and Porto Rico. And beneficent reforms were made in the Federal courts to expedite procedure and to curb the issue of injunctions. (See also CONGRESSIONAL LEGISLATION.)

**Recession, 1937.**—The failure of Congress to legislate on crop control in wheat, cotton, corn, tobacco and rice, to tackle the problem of the revision of the anti-trust laws, to provide for the reorganization of the executive department, to set up six new regional planning systems like the T.V.A., or to produce a wages and hours bill for industry, led the president to call an extra session of Congress on November 15. In the interval between the two sessions a severe "recession," which seemed to many to presage a major depression, had set in. Business activity declined from a high index number of 111.2 on August 14 to 88.9 on November 20. Steel production fell from over 80 to 31. The stock market entered on a tail-spin which sent the average of 50 issues down from 135.5 to 82. In every branch of heavy industry there was more or less stagnation, in the face of urgent need for expansion. The \$12,000,000,000 utilities interests, for example, required an expenditure of more than \$1,000,000,000 for construction work in 1938 (see PUBLIC UTILITIES). The President, in his message of November 15, spoke of the "marked recession in industrial production and purchases," and asked the co-operation of business "not only to produce goods for the nation's market but to furnish markets for the nation's goods." Concentration on the President's program for the extra session, however, was largely thwarted by the bitter controversy which arose over the causes and the cure of the recession. On the one hand, it was urged that the rapidly sinking curve of production and capital values was due to the fear injected into business by unsound taxes, such as those on undistributed corporation earnings and on capital gains, and by excessive government regulation. The champions of the administration, on the other hand, charged the "economic royalists" with staging a deliberate sit-down strike in order to discredit President Roosevelt and of "raiding" the stock market for political ends. The way out of the recession, said some, was to support the president as heartily as he had been supported in 1933; while others maintained that deliverance could come only from stern resistance to further Federal regulation of business. With this wrangling over basic policies and with a futile filibuster over the Wagner Anti-Lynching Bill stirring sectional discord in the Senate, it is little wonder that the extra session got off to a bad start. The results of its five weeks deliberation were scanty. Although farm bills were prepared and the new Wagner-Steagall bills passed in both Houses, and although some progress was made in recasting the Black-Connery Wages and Hours Bill (which had passed the Senate in the summer of 1937), no progress was made in the other items of the President's program and no major bill was ready for his signature. It was questionable whether the results of the extra session justified the \$220,000 which it cost the taxpayers for mileage allowance.

The most obvious fact of the economic history of the United States in the year 1937 was the contrast between the rising curve of prosperity in the first half of the year and the steady recession in industry, capital values, and stock market prices which characterized the second half. Not that there was any such sud-



den plunge into the abyss of depression as occurred in 1929, when, as a result of the unhealthy "boom" conditions of the Coolidge era, there was a surplus of production of durable goods, an excess of corporation borrowing, wild speculation in the stock market, an alarming increase in bank failures, a demoralization of world trade, and a persistent depression of farm prices which made it impossible for the farmer to meet his taxes and interest charges and have any dollars left to purchase the goods turned out by industry. These evils had been remedied to a great extent since 1933. In 1937 there was a shortage in housing and industrial equipment, with ample capital waiting for investment. The banks were in sound condition (*see* BANKING). Many abuses in the stock market had been eliminated by the Security Exchange Act (*see* STOCK EXCHANGES), and the investing public, somewhat sobered by their losses in the great crash of 1929, were more wary both of the kind of securities they bought and of the method of trading on margins. Farm income had doubled in the period 1932-37, reaching a total of about \$8,500,000,000 in the latter year, thanks to the benefits distributed to the farmers under the A.A.A. and the Soil Conservation Act; so that, in spite of further needed farm legislation (being worked out in Congress in early 1938), the farmer has a fair "cushion" of funds with which to meet the present "recession."

By the midsummer of 1937 the economic balance-sheet presented an encouraging aspect. Taking as a base the figures of 1923-25 (quite prosperous years before the "boom") the production index of July, 1937, was 114. Two percent more people were employed, and the payrolls showed an increase of 1.2%. Although the cost of living rose about 4% in the 12 months previous to July 1937, it was still considerably lower than it had been a dozen years before, and wages had risen faster than living costs. Foreign trade, which had declined more than 50% in the depression years, was regaining its normal status, the volume of exports reaching the 1923-25 level and the imports showing an increase of about 13%. Steel production in the first quarter of 1937 ran nearly 600,000 tons ahead of the previous high record of 1929, and the U.S. Steel Corporation paid off the accumulated dividends of over \$18 a share on its preferred stock. The sale of electrical goods reached \$2,400,000,000, a 15% advance on 1936. The total dividend disbursement in 1937 was \$4,550,000,000, the largest since 1930. The national income, which had sunk below \$40,000,000,000 in 1932, had risen to nearly \$70,000,000,000, and President Roosevelt in his message to Congress in January, 1938,

spoke confidently of raising it up to or above the figure of \$90,000,000,000 attained before the depression.

With all these signs of business prosperity at the mid-year, the slump of the autumn and early winter came as a storm out of a fairly clear sky. "There is no adequate justification," said Alfred P. Sloan of the General Motors in his New Year's statement, "for the situation in which we find ourselves." The explanation generally adopted by the big industrialists like Mr. Sloan is that the recession in business was due to political rather than to purely economic causes. Continued Federal expenditure for relief, public works, agricultural subsidies, housing projects, and so forth, in excess of the Government revenues had both resulted in national deficits for a number of years and tempted the Government to seek sources of revenue (like the capital gains tax and the undistributed profits tax) which were a burden upon business. Seven years of unbalanced budgets had raised the national debt from \$16,185,000,000 in 1930 to \$33,778,000,000 in 1936, and, in spite of attempts to pare the budget, another \$2,993,000,000 was added to the debt in the calendar year 1937. If Congress, in obedience to the president's demands, continued its "extravagance," confidence in the Government's ability to get out of the red might be destroyed and a period of inflation might set in which would ruin the creditor classes. President Roosevelt in his last three annual messages held out the hope that the budget would be balanced "next year"; but the increased treasury receipts never sufficed for the expenditures. And in Jan. 1938, the president spoke of a budget stabilized at about \$7,000,000,000—to balance which additional revenues of over \$1,000,000,000 will have to be found (*see* BUDGET). Aside from the uncertainty of the tax situation occasioned by the unbalanced budget, big business was apprehensive of the extent to which the Government might go in its policy of regulating wages and hours, of tightening the anti-trust laws, of entering into competition with private industry in the utilities field, or of supporting the aggressive tactics of organized labour and the rulings of the National Labor Relations Board.

How far such apprehensions are a justifiable and honest reason for the sudden slowdown of capital investment and the consequent industrial slump is hard to say. At any rate, the situation gave rise to a bitter controversy. At just the moment when the president was urging co-operation between industry and the Government and inviting representatives of big business to conferences at the White House, the "rugged individualists" on the one hand were laying the blame on the dogged folly of the administration, and responsible men in the administration, like Assistant Attorney-General Jackson and Secretary Ickes were accusing the industrial leaders (most of whom belong to the Republican party) of fostering a state of fear in the nation in order to create hostility to the administration—even as the Jacksonites a century ago charged Nicholas Biddle and Henry Clay with engineering a financial panic in order to dish the Democrats. A foreign comment on the eco-



U. S. NAVY GUNBOAT "PANAY" bombed and sunk in the Yangtze river near Nanking, China, by a Japanese Navy aeroplane



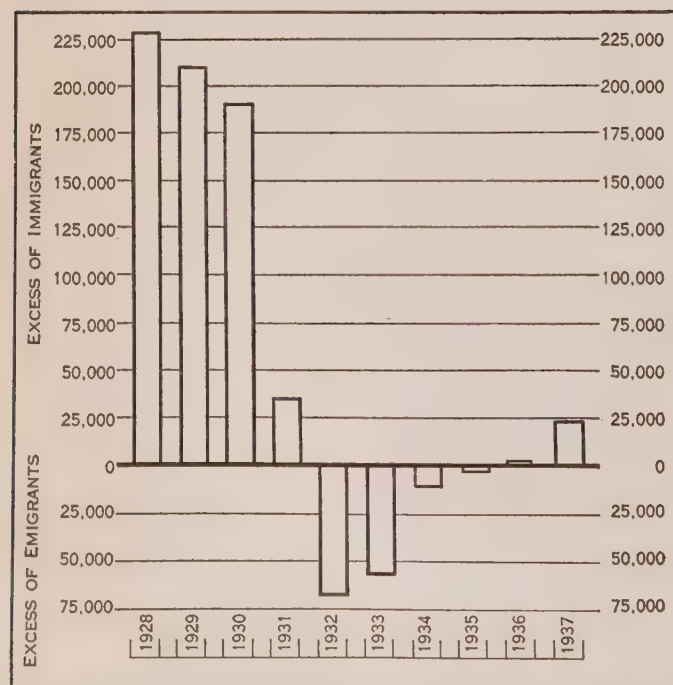
conomic recession of the latter part of 1937 was of interest. A cable from Paris, December 22, ran: "The American situation is not considered here as anything analogous to 1929. General opinion is that your depression is temporary . . . especially if Roosevelt refrains from all initiatives susceptible of augmenting the burden on business."

"Until now the American economic system has been stimulated by government spending. Henceforth American capital ought to feed business activity directly, instead of being used for subscription to Government loans."

**Labour.**—The contention of capital that the behaviour of organized labour was to a large degree responsible for the recession was based on serious warfare between capital and labour in the early months of the year. The Wagner National Labor Relations Act, passed in July, 1935, and upheld by a 5 to 4 decision of the Supreme Court on April 12, 1937, had created a board of five members to administer the act. In the 17 months up to the spring of 1937 the National Labor Relations Board handled more than 2,000 labour disputes, involving 750,000 workers, and settled 75% of the cases peaceably. But toward the close of 1936 two factors entered into the situation which greatly augmented the friction between labour and capital. First, the veritable flood of dividends disbursed by the corporations, as a result of the improved condition of business and of the desire of capital to escape the new taxes on undistributed profits, convinced labour that it was not getting its fair share of the fruits of reviving prosperity. And, second, a new type of labour union had appeared in the field, recalling some of the features of the "one big union" idea of the old Knights of Labor and the I.W.W. This was the Committee of Industrial Organization (the C.I.O.), started in November, 1935, by the dynamic John L. Lewis, president of the United Mine Workers. Both in structure and in spirit the C.I.O. differed from the long-established American Federation of Labor. It advocated the organization of all the workers, skilled and unskilled, in a given industry (the vertical plan) as against the more aristocratic, "horizontal", craft unions of skilled labour, which composed the A.F. of L.; and it approved drastic and direct action to bring pressure to bear on the employers, in place of the conciliatory conference methods of the older organization. There

had been a clash between the A.F. of L. and the C.I.O. in 1936, when ten unions had been suspended from membership in the Federation for adopting the C.I.O. organization. But it was not till after the re-election of President Roosevelt, to which Mr. Lewis' union had contributed a large sum in the lively hope of favours to come, that the C.I.O. moved simultaneously to its attack on big business (especially the steel and automobile industries) and on the A.F. of L. As its most effective weapon it adopted (from France) the "sit-down" strike, first applied when 1,000 workers in the Bendix Products Company of South Bend, Ind., quit work on Nov. 17, 1936, but refused to quit the factory to let other workers, strike-breakers or scabs, take their place. The next month the workers in the Midlands Steel Products mill at Detroit followed suit, and a wave of sit-down strikes swept over the country (*see STRIKES AND LOCK-OUTS*). In the first week of 1937 there were more than 100 strikes in progress. For the most part the sit-down strikes were conducted without violence, the political authorities, like Governor Murphy of Michigan refusing to precipitate a conflict by calling on the militia to evict the strikers, and the latter making a kind of picnic out of their encampment on the employers' property, as they waved to their families from the windows and drew up the baskets of food which their wives and children brought. But occasionally there was serious rioting and even bloodshed. For example, at the Republic Steel Works near Chicago, fighting on May 30 resulted in the death of ten strikers and the injury of 100 strikers and 28 policemen. The C.I.O., in spite of the fact that it was obviously using force to drive the workers into its unions, grew by leaps and bounds, until it claimed by midsummer to have drawn away a full half of the membership of the A.F. of L. Realizing that the split between the two great labour organizations was hurting the cause, their heads, William Green and John L. Lewis, met in a number of conferences from October to December to try to reach a working agreement. But as each side was adamant in its demand to represent the labour movement and to reduce the other side to a position of tolerated, if not obedient, dissent, nothing came of the conferences.

Aside from the purely economic struggle of labour with capital and the Green-Lewis fight within the ranks of organized labour itself, which are treated elsewhere in this volume (*see LABOUR UNIONS and LABOUR ARBITRATION*), the politico-legal aspect of the labour question assumed unusual importance in the year 1937. What was the proper attitude for the political authorities, from the president down to the mayors and the sheriffs, to take in the struggle? Were the sit-down strikers guilty of trespass in occupying the property of the employers after laying down their tools? Was the National Labor Relations Board a fair and efficient tribunal in the disputes between capital and labour? President Roosevelt, whose example naturally influenced the lesser officials, refused to intervene to bring the executives of the General Motors Company or the Republic Steel Company to an agreement with Mr. Lewis, as Theodore Roosevelt had intervened to call a conference between the coal operators and Mr. Lewis' predecessor as president of the United Mine Workers, John Mitchell. Nominally impartial, the president leaned to the side of labour, characterizing as "unfortunate" the reply of Alfred P. Sloan of General Motors to the demands of Lewis, and having "a pleasant talk" with the latter, his good friend, at the White House, on September 15. Indeed, Mr. Lewis went so far as to remind the president that he owed his election to labour (an indefensible assertion) and to warn him that there would be a bolt from the Democratic party if he did not support the C.I.O. This was too much even from a good friend, and in his Labor Day address of September 4 (the day after the "warning") the president charged both sides with having committed mistakes and showed his annoyance at the long



BALANCE OF MIGRATION to and from the United States of America, 1928-1937. (Figures are for fiscal years ended June 30)





IS MASS PRODUCTION of apologies and regrets an "example of the industrialization of Japan"? asks Berryman in the *Washington Evening Star*

continued feud of Capulet capital and Montague labour by invoking "a plague on both your houses." As the recession grew worse in the autumn and early winter, the president adopted a more conciliatory attitude toward capital, calling several of the leaders of industry to the White House for consultation on the ways and means of halting the slump.

Secretary of Labor, Miss Perkins, at first seemed to favour the sit-down strike, declaring that its legality "had not yet been determined." But later she changed her view, perhaps in deference to public opinion, which, if we may trust the poll conducted by the magazine *Fortune*, condemned this policy of compulsion used by the C.I.O. Of the four classes of people polled: executives, salaried employes, factory workers, and the unemployed, the percentage of those who voted in favour of keeping the plant open for non-strikers was larger than that of those who voted that the plant should be closed. The opinion of the unemployed, who were looking for a job, may not be surprising, and, naturally, the executives and the salaried force would vote against the sit-down; but that 39.7% of the factory workers themselves pronounced in favour of keeping the plants open, as against 36.8% who voted for closing them, was highly significant. It meant, as *Fortune* commented, that "American labour attaches too much value to a job, and too little to a union, to be really ripe for strong and sustained union militancy." Even in the month of January, 1937, when the "militant" union policy of the C.I.O. was just getting under way, a poll of the American Institute of Public Opinion showed 53% in sympathy with the companies to 47% in favour of the strikers. In these figures, perhaps, we may see why the sit-down strikes, after some apparent success in the early spring, died down by summer, and the C.I.O. became more amenable to the conference method of settling labour disputes. It is significant that in the same poll taken by *Fortune*, executives and factory workers agreed by almost the same figures (48.6% and 48.3%) that the best way of settling such disputes was by a committee of employers and employees.

Less than one-half as large a vote was cast for intervention by the Federal Government.

In view of the absorbing interest in Federal mediation in labour troubles and the elaborate machinery set up for its use, and in view of Mr. Lewis' rather threatening gestures to coerce the administration into active support of the C.I.O., it is to be noted that only 28.2% of the factory workers who voted favoured Government intervention. Such intervention has been chiefly

exercised through the Wagner National Labor Relations Board (the N.L.R.B.), which, since its successful operations in the spring of 1937, has tended to become more itself a subject of controversy than a composer of controversies. Capital accuses the board of manifesting a strong C.I.O. bias, and labour complains that it exceeds its delegated power in interfering with wages and hours. Both sides have charged it with arbitrary and unfair rulings and both have attempted to dictate to the board as to how the elections were to be held for the determination of whether the workers should be organized under the A. F. of L. or the C.I.O. Typical of the activities of the N.L.R.B. was its indictment of the managers of the Ford motor plant at Buffalo, on December 23, for violation of the Wagner Act, and its order to the company to cease and desist from interference with the organization of the workers. The company filed a rejoinder, characterizing the charges as "absolutely untrue," and prepared to fight the case in court.

Altogether, the record of the year 1937 in labour relations was far from encouraging. In the first five months of the year more than 2,000 strikes (more than the total number in 1936) were recorded by the Bureau of Labor Statistics, involving 965,000 workers. The bitter quarrel between the C.I.O. and the A. F. of L. filled the entire year. The Black-Connery Labor Standards (wages and hours) bill proved to be a subject of controversy rather than a solution of the problem. Though passed by the Senate in mid-summer, it failed of approval in the House, and it was not until December that a petition signed by the necessary majority of 218 members was secured to compel the Rules Committee to bring the bill to the floor, where its fate still remains uncertain in January, 1938. It was hoped that the creation of the N.L.R.B. would do for industry what the Railway Labor Board of 1926 had done in averting a major strike on the railroads; but, as has been stated, the N.L.R.B. failed to satisfy either the employers or the workers. The lesson of 1937 would seem to be that less reliance should be placed on governmental machinery and more on the conference method in securing such measure of peace and harmony as is possible in the field of labour.

Turning to the subject of transportation, substantial progress was made by the railroads in 1937, though they had not yet recovered from the inroads made on their business by the competition of bus, truck and aeroplane. By improving the comforts of travel and the speed of their air-conditioned streamline trains, the roads attracted a monthly average of over 20,000,000 passengers, excluding commuters, in 1937; and with their light but strong steel cars and their Diesel-powered low-fuelled locomotives were able to carry passengers profitably at the rate of less than two cents a mile prescribed by the Interstate Commerce Commission. The report of the president's National Resources Committee, completed in July, stated that "the producer, the manufacturer, the merchant, the public utility, and the individual are getting a freight service (as well as a passenger service) measured in hours instead of days, and in days instead of weeks, even as compared with 15 or 20 years ago." Naturally, as the speed, the efficiency, the economy, and the comfort of railroad travel increase, the demand for railway service grows. And while buses and trucks may cut into the short-haul business of the railroads, and aeroplanes may transport more of the lighter and more valuable freight and the passengers who are willing to pay for very rapid transportation, there is little doubt that the vast railway system of the country, whose reproduction value was estimated by the Interstate Commerce Commission at the close of 1937 at \$26,238,857,000, will continue to be the main agency of continental travel and commerce. As stated above, the railroads have had no serious strikes since the operation of the Railway Labor Board of 1926. However, there was a constant pressure put upon them by the railroad brotherhoods for an increase in wages, and a counter



demand on the Interstate Commerce Commission by the roads for an increase of rates. On August 25 the refusal of the roads to grant a 20% rise in wages threatened a strike of 250,000 workers; but the Federal mediator at Chicago was able to avert a break. On October 22 the Interstate Commerce Commission granted a freight rate increase of \$47,500,000 to the class I roads, and the next month (November 29) hearings were begun before the Interstate Commerce Commission on an appeal of the railroads for a \$500,000,000 rise in freight rates to offset the improved equipment and the increased operating cost of the roads. The railroad managers also declared that the increase of rates asked for would enable them to spend \$900,000,000 on needed new equipment. Though granting an increase in passenger rates to the roads west of the Mississippi, the Interstate Commerce Commission, on December 10, declined to sanction a general rise; but a week later the commission relented enough to grant an increase in freight rates estimated to yield \$20,000,000 annually. Meanwhile the roads secured lower prices for coal and a pledge from Chairman Jesse Jones of the R.F.C. to loan them funds for their operating expenses. (See RAILROADS.)

**Merchant Marine.**—Considerable progress was made in 1937 in the development of a worthy merchant marine. Though the United States ranked only below Great Britain, Germany and Japan in the number of merchant ships, the great majority of the vessels were employed in coast-wise and inland waterways traffic. Only 374 merchant ships were in overseas trade. The reasons for this lag in merchant marine were: first, foreign countries could build ships at a cost of 30–40% less, and, second, the wages of American seamen, since the Furuseth Act of 1915, were much higher than those of foreign seamen. Government subsidies to shipping, therefore, were indispensable for the maintenance of an American merchant marine. The Merchant Marine Act of the summer of 1936 created a Maritime Commission, of which Joseph P. Kennedy, formerly chairman of the Securities Exchange Commission and later ambassador to Great Britain, was made chairman. On November 9, Mr. Kennedy made a special report to Congress, advising a liberal increase in shipping subsidies and aid in ship building up to \$250,000,000, to revive "a very sick industry," and on November 30 the indefatigable chairman summoned a delegation of over 20 merchants to Washington, to plan service on 23 basic overseas trade-routes. On October 22 the Commission contracted for the building of a \$15,750,000 ocean liner to replace the "Leviathan," which had been taken over from the Germans at the time of the war and which, after being tied up at her dock in Hoboken for several years, was sold (December 10) to British firms to be scrapped. The Maritime Commission also asked for loans to build flying boats and for Federal supervision of ocean air travel.

**Aviation.**—The record made in aviation during the year 1937, both in the Government service and in private passenger and commercial lines, was striking. According to the report of General Westover, chief of the U.S. air corps, more than 400 fighting planes of the last word in equipment, speed, and safety devices (such as the automatic landing control) were added to the army air force during the year, in the plan to bring the total number of army planes up to 2,320 by June 1940. The navy program, as outlined by Rear Admiral Cook, chief of the bureau of aeronautics, contemplated a force of some 2,000 combat and patrol planes by 1942. During the period from June 1936 to December 1937 over 600 transcontinental and overseas flights of from 2,000 to 3,000 mi. were made without loss of life. The U.S. naval air station at Pensacola, Fla., turned out 297 qualified aviators during the fiscal year of 1937. The investment in commercial aviation rose from \$30,000,000 in 1930 to \$100,000,000 in 1937, when there were 78 domestic routes covering 200,000 mi. a day and

served by 2,366 airports. Trans-Pacific mail and passenger service, which had been inaugurated in Nov. 1936, by simultaneous east and west flights of the Philippine Clipper and the China Clipper between California and Manila, was extended to Hong-kong on Dec. 1, 1937, and to New Zealand on December 26. Early in July Pan American and Imperial Airways began "path-finding" flights between Ireland and Newfoundland, with a view to organizing a trans-Atlantic service.

Unfortunately, the aviation record of the year was marred by several accidents resulting in the loss of over 40 lives. On July 2 the last radio messages from the South Pacific were received from the most famous woman aviator in America, Amelia Earhart, who with her pilot Fred Noonan was making a round-the-world flight. United States warships and planes searched the waters of the Pacific for ten days without finding a trace of the missing flyers. Eleven persons were drowned when a United Airlines plane fell into San Francisco bay on February 10. On October 18 the passengers and crew, numbering 19 in all, were killed when a magnificent airliner crashed into a peak of the Utah mountains east of Salt Lake City. But the worst air tragedy of the year occurred at Lakehurst, N. J., when the great German dirigible "Hindenburg" burst into flames just as she was approaching her mooring post in the early evening of May 6 and crashed to the ground carrying 36 persons to death in the burning wreckage.

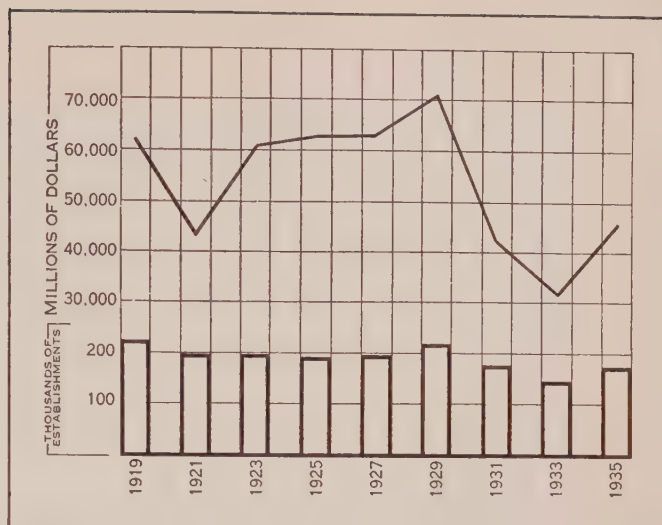
**Social Security and Relief.**—When President Roosevelt signed the Social Security Act on Aug. 14, 1935, he declared that it was the most important measure of his administration. That act, still a subject for revision, extension, and lively discussion, was significant in that it marked for the first time the Federal Government's acknowledgment of a responsibility for the welfare of the aged, the crippled, the blind, dependent mothers and children, the jobless, and workers who worried over losing their jobs or over what would befall them when their days of usefulness were past. It was a complete reversal of the dictum of President Cleveland that it was the duty of the people to support the Government, but not of the Government to support the people. Except for certain direct grants to the blind, the crippled, and destitute mothers and children, the act made Federal aid contingent upon the legislation of the States, with the provision that such legislation must be approved by the National Social Security Board. To tide the workers over periods of sickness or forced unemployment, a tax of 1% for 1936, 2% for 1937, and 3% for each succeeding year was levied on the payrolls of every employer of more than 8 workers (except in agriculture, domestic service, and a few other exempt classes). In addition the act contained provisions for old age pensions for the needy and a scheme of old age insurance for workers generally. To the latter scheme both workers and employers were to contribute in equal shares: namely, 1% of the worker's wages for the years 1937–39, with a graduated increase up to 3% for the years 1949 and following. It was estimated that by 1980 the receipts from these assessments would reach the huge figure of \$47,000,000,000. Already by the end of Sept. 1937, the fund in the treasury amounted to \$448,500,000. During the first year of the operation of the Social Security Act 36 of the 48 States adopted the old age pension system, and a dozen States had passed laws enabling them to participate in the old age and unemployment insurance benefits. In the single month of Dec. 1936, no fewer than 19 States were added to the list, and the year 1937 saw the remaining 12 States and two territories within the jurisdiction covered by the Social Security Act pass legislation for unemployment compensation. Only Virginia at the close of the year remained without an old age insurance law. On May 27 the Supreme Court, by a vote of 5 to 4, upheld the unemployment insurance and old age pensions clauses of the Social Security Act. The Child Labor amendment



to the Constitution, which had been pending since 1924, was approved in 1937 by the legislatures of Kansas and Kentucky, bringing the total number of ratifications up to 28—only 8 short of the necessary three-fourths of the States. (See also SOCIAL SECURITY and RELIEF.)

The year also saw the first attempt of the Government to make an accurate census of the unemployed, when President Roosevelt on August 30 signed a bill for such a census to be taken through the post office machinery, and allotted \$5,000,000 of relief funds to administrator, John D. Biggers, for the job. The census, taken in November, registered 7,822,912 names, but Mr. Biggers believed that not more than 70% of the unemployed had actually registered, and he consequently estimated the number of idle at approximately 10,000,000, or about one-fifth of the nation's potential workers. That so large a proportion of the normally "gainfully employed" were still out of work was a sharp reminder that the problem of Federal relief was not, in the president's phrase, "to be placed in the filing case."

As has been stated, the president, by dint of insistent pressure, kept Congress from cutting down by a third his demand for a \$1,500,000,000 relief appropriation at the beginning of 1937. President Green of the A. F. of L., stating on April 11 that the unemployed numbered 9,700,000 (an estimate in close accord with Mr. Biggers' census of seven months later), declared that the Government must find work for at least 3,000,000 of the idle during the ensuing year, and held that the Government aid should be in the form of work on useful projects rather than on the relief-roll basis, "in order to avoid making permanent paupers out of millions of self-respecting Americans." The Department of Labor announced that 1,400,000 workers had been added to the pay rolls of private industry in 1936 and that W.P.A. jobs had been curtailed by Administrator Hopkins. But when the business recession of 1937 set in the W.P.A. workers waited on Mr. Hopkins and staged "job marches" to have their work restored. The President denied their plea for reinstatement (August 24), while granting that there should be an end of relief job cuts. However, on December 9, Administrator Hopkins announced an increase of 350,000 W.P.A. workers. The expenditures of the W.P.A. for the first 11 months of the year 1937 amounted to \$1,397,380,000. There was a great deal of criticism of the W.P.A. on the ground of excessive Federal spending, favoritism in the local allotments of projects, the futility of many of the projects supported, "dictatorial" power in the hands of Mr. Hopkins, and so forth. Mr. Abraham Epstein, Executive Secretary of the American Association for Social Security, repeatedly urged that the problem of relief should be intimately related to that of unemployment insurance, so that the needy unemployed should not be "shifted back and forth from the relief rolls." Since many now on relief are averse to accepting temporary jobs for fear that they will not be returned to the relief rolls when the job is over, Mr. Epstein ad-

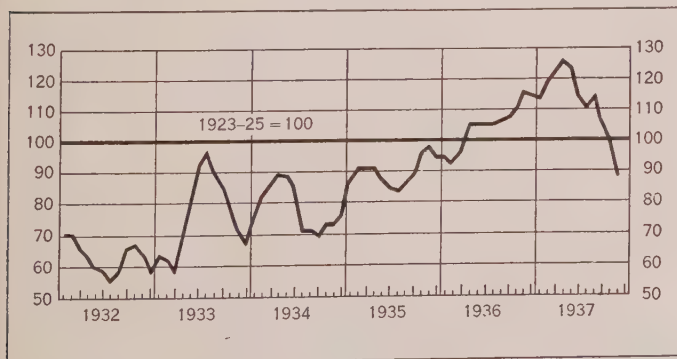


MANUFACTURES IN THE UNITED STATES: number of factories with products valued at \$5,000 or more in the year (columns at bottom) and aggregate value of their products (line above)

vocated giving immediate and equal insurance benefits to all who are unable to find work "from the first day of their unemployment to the time they find a job." Thereby, he believed that slackers would be eliminated and the laziness and shiftlessness of uninterested workers on relief would be done away with. When granted on a dignified and secured basis, he said, relief can be as self-respecting as unemployment insurance. "Made work" is as likely to injure morale as is relief. "Handling a shovel or compiling meaningless statistics does not add to the dignity and morale of either the skilled worker or the technician."

**Crime.**—The year witnessed persistent and on the whole encouraging efforts to deal with an evil which has long been a source of indignant humiliation for every decent American. Murder, homicide, kidnapping, holdups, burglary, racketeering, and graft present the nation with a crime bill estimated at \$15,000,000,000 a year. The homicide rate is 20 times as high as that of Great Britain, and criminal law is so badly enforced that only a tiny percentage of the offenders are caught, convicted, and condignly punished. There are 3,500,000 known criminals at large in the United States (many of them thanks to the laxity of the parole system), and the chances are far more than even that every American citizen, at some time or other in his life, will become a victim to some form or other of organized crime. For the year 1937 J. Edgar Hoover, chief of the Federal Bureau of Investigation (the "G-men"), reported progress in ridding the country of gangster bands and capturing a number of desperate public enemies. Police training schools were increased and more than 90% of the criminals investigated by his bureau were convicted. Facilities for the detection of criminals were extended by the identification division of the Federal Bureau of Investigation, until it had nearly 8,000,000 finger print cards on file.

A scientific and humanitarian approach to the crime problem is tending to displace the purely punitive attitude. Recognizing how deeply the roots of crime are sunk in poverty, idleness, slum dwellings, and lack of education, public and private agencies were at work to improve the material and moral conditions under which the next generation will grow up. The provisions of the Social Security legislation and the housing program are cases in point. For example, in 1937 the Government completed the model co-operative town of Greenbelt, seven miles from Washington, which will house 885 families at rentals as low as \$18 a month. The project, which cost the Government \$14,000,000 and employed nearly 10,000 W.P.A. workers, is expected to yield \$425,000 a year in rents, of which \$60,000 will be profits. Since the

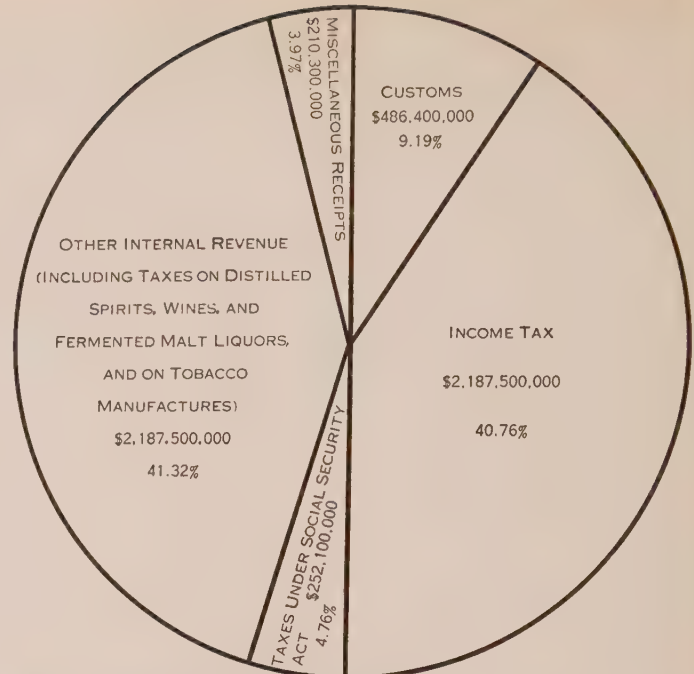


MANUFACTURING PRODUCTION in the United States; Federal Reserve Board index, without adjustment for seasonal variation



tenants will represent families in the income groups of \$1,000-\$2,000 a year, Greenbelt and similar projects will not take care of the slum dwellers; but such projects point the way to the cheaper mass construction of decent homes which promises, in conjunction with the drives for higher wages to the labouring class, to remedy the slum dangers of bad health and morals that contribute so heavily to the budget of crime in the United States. (See also CRIME and FEDERAL BUREAU OF INVESTIGATION.)

**Socialized Medicine** was a subject of much discussion during the year 1937. In April a pamphlet entitled *Doctors, Dollars, and Disease*, published by the Public Affairs Committee of Washington, brought a number of disturbing facts to the attention of the people. Americans were paying out more than \$350,000,000 a year for patent medicines of doubtful value, and another \$125,000,000 to quack doctors and fake healers. The high cost of proper medical care prevented the "middle-class" from getting its adequate share of attention, while the well to do and the poor (through charity) fared much better. For example, families with less than \$2,000 income averaged only two calls from physicians a year, as against five for families of the \$10,000 class and over. About half the doctors' fees were paid by 10% of the families. To span the gulf between the millions of people who are in sore need of medical care and the thousands of doctors who are available to render them service, a Government-sponsored health insurance program was discussed, a program somewhat similar to that which has been in efficient operation in Great Britain for a quarter of a century and under which all persons earning less than \$1,250 a year contribute a small amount (about ten cents a week) out of their wages, while the employers and the State make up the fund necessary to pay for medical care. More than 18,000,000 persons are thus insured, and are on the "lists" of some 16,000 physicians who volunteer to take insurance cases, which net them an average of \$2,250 a year. That there are many American doctors who would be glad to receive such an amount in addition to what their private practice brings goes without saying. Various forms of co-operative medical plans are already operating in local communities, in universities and colleges, and in industrial plants. Notable among these are the Ross-Loos clinic of Los Angeles which provides medical care by its staff of 25 doctors for a subscription of \$2 a month, and the Associated Hospital Service of New York city, to which about 250,000 members subscribe the \$10 annual fee entitling them to semi-private care, including board and nursing, for a period of three weeks in any one of 197 hospitals. The American Medical Association has generally been opposed to socialized medicine or compulsory health insurance for fear of the introduction of politics into the profession or the lowering of the fees (the doctors being actually at the head of the list in respect to average incomes in the country). But the trend of the whole economic set-up toward the relief of the underprivileged, added to the beginnings which the Government has already made for the care of the sick, the blind and the disabled in the Social Security legislation, seems to point inevitably to some system of public health insurance. Few people realize the extent to which the Government has broadened its responsibilities in this direction since Congress in 1798 inaugurated the U.S. Public Health Service by the founding of the Marine hospital to care for its sick and disabled sailors. Today the Government operates three-fourths of the tuberculosis hospitals, one-third of the general hospitals, and practically all the institutions for the insane in the country. In the control of milk and water supplies, the inspection of food, the examination of eyes, ears and teeth of school-children, the prevention of epidemics, the provision of parks, playgrounds, swimming pools, the public authorities are constantly widening their activities. The work of the Children's Bureau under the tireless management of Miss Katharine Lenroot



RECEIPTS OF THE FEDERAL GOVERNMENT in fiscal year ended June 30, 1937 (\$5,293,800,000) by source of revenue

has shown a remarkable record in cutting down the mortality rate of infants and mothers in cases of child-birth during the year. (See also SOCIALIZED MEDICINE.)

**Education.**—Scientific progress and the spread of free education, which are indispensable elements of social well-being in a democracy, have marked 1937. It would be impossible here to list the scientific achievements of the year, which the reader may find conveniently summarized in the *New York Times* of Jan. 2, 1938. But attention may be called to some important developments in the field of education. The public school enrolments in the elementary grades reached 23,000,000 and in the high schools 7,000,000, as against 15,000,000 and 500,000 respectively in the year 1900. At the earlier date \$215,000,000 was spent for education, a figure which has risen to nearly \$3,000,000,000. The growth of the junior college, to continue for two years the education of that large proportion of high school graduates who did not wish to, or could not afford the time and money to go on to a four years' college course, was rapid. In 1937 the 538 junior colleges, situated in all but three States of the Union, enrolled 130,000 students. But even more significant than the growth in numbers has been the emphasis upon a curriculum and a method of teaching aimed at producing a different type of student from the fact-stuffed, examination-worried boy and girl. Instead of the older routine which the weak toiled through in fear and the strong in rebellion, both hailing the end of the term as a day of deliverance from prison, the school now provides companionship, guidance, sympathy, and stimulus. The cultivation of a social conscience, rather than rivalry for individual success, is more and more emphasized as the purpose of education. One must acknowledge also the fine work done in the field of adult education by the W.P.A., whose educational division, operating in all the States of the Union, employs today 30,000 teachers of 1,250,000 students. The last census of the United States listed 4,500,000 illiterate adults in the country. This alarming number has already been reduced by 700,000 and the W.P.A. has set a tentative figure of 300,000 more for the coming year. In February 1937 the National Education Association passed a resolution commending the officials of the W.P.A. for "their foresight in recognizing adult education as an essential factor in national recovery . . . and for their efforts to



maintain high standards for the qualifications of teachers." And in March the superintendent of schools in Chicago declared that through the WPA program "those of us concerned with adult education as a function of Government have obtained a new vision." This work has not only been fruitful in itself in the past year but it has stimulated State departments of education, like those in Utah, North Carolina, Louisiana and Mississippi, to join efforts with the national organization in stamping out illiteracy.

Finally, there were incidents in the year 1937 which have appealed to the generous humanitarian spirit of the people of the United States. Early in the year terrible floods in the Ohio and Mississippi valleys rendered hundreds of thousands homeless and even threatened the destruction of great cities like Cincinnati and Louisville. Drought and dust storms followed soon after, with disastrous results to livestock and crops in the Middle West. Government agencies and private organizations, like the Red Cross, were quick to come to the relief of the suffering. The most pathetic tragedy of the year was the complete wreckage, on March 18, of a new school building at New London, Texas, through an explosion due to some defect in the gas-steam heating apparatus. Nearly 500 of the 740 pupils between the ages of 7 and 18 were buried beneath the ruins. Two flare-ups in race and sectional prejudice also occurred. The first came in August, when President Roosevelt chose Senator Hugo Black of Alabama to fill the vacancy on the Supreme Court caused by the resignation (June 2) of Justice Van Devanter (*see* BLACK, HUGO LA FAYETTE). The appointment of Black, an ardent New Dealer, was readily ratified by his fellow Senators; but it soon was revealed that Black had joined the Ku Klux Klan many years before, presumably to aid his political fortunes in Alabama. That he had not made this known when his name was under discussion led some of the Senators to protest that they would not have voted to confirm him had they known it, and many in the country to protest that he had obtained his high position through "fraud." On his return from Europe early in October he presented his *apologia* to the American people in a radio address, declaring that he had resigned from the Klan in 1922 and that he was opposed to all that it stood for. In spite of a fairly widespread demand that he should decline the appointment, and of petitions to the Court itself to declare him ineligible, Mr. Black was received by his fellow members when he took his seat at the opening of the December term, and the tempest in the tea-pot died down. The other disturbance was caused by the Wagner-Van Nuys anti-lynching bill, passed by the House on April 15, but held up in the Senate by a "filibuster" conducted by Bailey of North Carolina, Connally of Texas, and other Senators who denounced it as an insult to the South and a political manoeuvre to get the negro vote. The filibuster continued (to the detriment of important business) in the extra session of November 15, and was begun again in the regular session of 1938. (*See* LYNCHINGS.)

**Foreign Affairs.**—In the relations of the United States with foreign nations the most absorbing topic of the year was American neutrality: how can America keep out of war and at the same time not sacrifice "national honour," wreck foreign trade nor betray oft-repeated declaration of readiness to co-operate with other nations in securing a more stable and peaceful world. The failure of attempts to reconcile these conflicting purposes in the period of American "neutrality" under the leadership of Woodrow Wilson, added to the realization of the bitter fruits of the World War, the continuance of the mad race in armaments, and the actual military aggression of Italy in Ethiopia and Japan in China, stimulated the determination of Congress and the public to safeguard the neutrality of the United States. As early as August 1935, in view of Mussolini's attack on Ethiopia, a temporary neutrality act (to expire on Feb. 29, 1936) had been

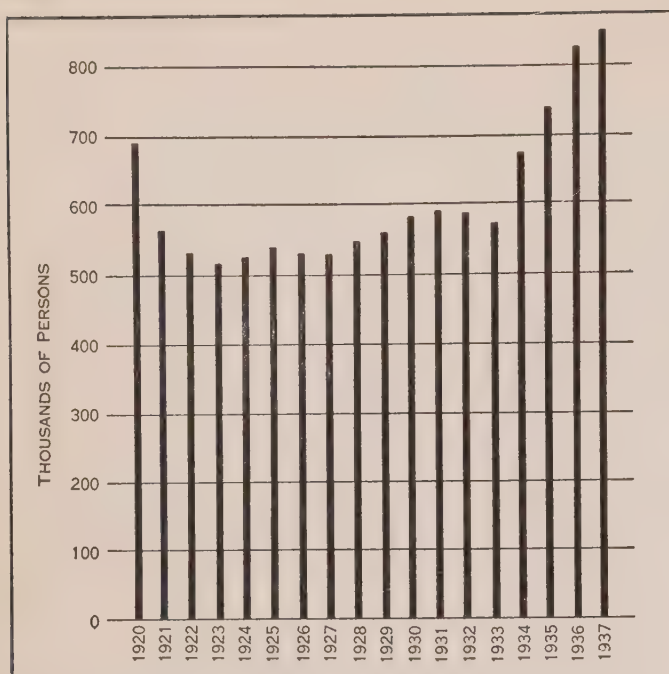
passed, forbidding the exports of arms and ammunition to the belligerents and authorizing the President to close American ports to belligerent ships which would use them as a base and to proclaim that American citizens travelling in belligerent merchant vessels did so at their own risk. A supplementary act of Feb. 29, 1936, also temporary in character (to expire May 1, 1937) dealt with embargoes, absolute and conditional, again with reference especially to the Italo-Ethiopian conflict.

The definitive neutrality legislation, therefore, was postponed to the spring of 1937. But, meanwhile, Congress at the beginning of its session in January, extended the provisions of the act of 1936 to the factions which were waging civil war in Spain. Three conflicting policies were advocated for neutrality legislation: first, an "ironclad," mandatory law of Congress, prescribing exactly what the President must do in the event of the outbreak of a foreign war; second, a combination of mandatory and "permissive" provisions, prohibiting arms traffic but allowing the President considerable leeway in determining other embargoes and in regulating the travel of American citizens and the movement of American vessels; and third, leaving it wholly to the discretion of the President and the State department (as was U.S. traditional policy) to deal with threatening situations as they should arise. From bills sponsored by the chairmen of the committees dealing with foreign affairs in the Senate and the House (Key Pittman of Utah and Samuel D. McReynolds of Tennessee) the final compromise act emerged, and was signed rather reluctantly on May 1 by the President, who objected to the mandatory provisions. The act, in its most important clauses, provided: (1) that on the President's proclamation of the existence of a war between two or more nations (except those in North or South America) it should be prohibited to export arms or to make loans to any of the warring nations; (2) that the President may by proclamation forbid American citizens to travel on the ships of nations at war; (3) that he may, at his discretion, forbid American ships to carry goods purchased in the United States by belligerents and require that such belligerents pay cash for the goods before they leave (the famous "cash and carry," or "cash on the barrel-head," plan); (4) that only such credits may be given to nations at war as will enable them to carry on "normal peacetime commercial transactions"; (5) that armed merchantmen as well as war vessels of the belligerents should be excluded from American ports; and (6) that the President may place an embargo on "certain other articles" than arms and ammunition. This law, in spite of the objections of the White House and the State department, puts wide discretionary powers into the hands of the President, the chief of which is that his own proclamation of the existence of a foreign war (which technically is not going on today

LEGISLATIVE, JUDICIAL, & CIVIL ESTABLISH- MENTS	\$814,700,000
NATIONAL DEFENCE	\$888,600,000
VETERANS PENSIONS & BENEFITS	\$1,128,200,000
INTEREST ON THE PUBLIC DEBT	\$866,400,000
PUBLIC WORKS	\$1,079,400,000
UNEMPLOYMENT RELIEF	\$2,466,800,000 (INCLUDING \$385,800,000 FOR CCC)
AGRICULTURAL ADJUSTMENT PROGRAM	\$515,800,000
SOCIAL SECURITY	\$447,700,000

EXPENDITURES BY THE FEDERAL GOVERNMENT, fiscal year ended June 30, 1937





FEDERAL EXECUTIVE PAYROLL at end of fiscal year, 1920-1937

in China, for example) is necessary to set the neutrality act in motion at all. As to whether any neutrality act short of complete isolation can avail to keep the United States out of war, opinion is very much divided. At any rate, complete isolation was repudiated by the president in his Chicago speech of October 5, when he declared that "the United States must play a part in the concerted effort to preserve international peace," and that when "innocent peoples and nations are being cruelly sacrificed to a greed for power and supremacy which is devoid of all sense of justice, the peace-loving nations must make concerted efforts to uphold the laws and principles on which alone peace can rest secure."

But what about "concert" with a "peace-loving" nation to which the United States denied the needed access to the sinews of war? The problem of neutrality is by no means solved by the act of May 1, 1937. Indeed, many believe that that act is more likely to involve the country in war than to keep it out. Another proposed deterrent of war was the resolution of Louis Ludlow, congressman from Indiana, to the effect that, except in case of defence against invasion, war shall be declared only on the vote of the people in a nation-wide referendum. This resolution, introduced in 1935, was buried in committee; but it was resuscitated in the extra session of November, 1937, by Senators La Follette of Wisconsin and Arthur Capper of Kansas and proposed as an amendment to the Constitution. Since the people fight the wars and suffer from them, it was urged that the people should decide whether wars were to be fought. The proposal was condemned by the president and officialdom generally on the ground that it would tie the hands of the executive, interfere with diplomatic negotiations, and reveal to foreign nations unfortunate divisions of opinion that were sure to exist. The nation must seem to be united, they argued, in case of a threat of war.

Furthermore, it was urged that a vote of the people, excited as they would be by belligerent propaganda in the press and on the platform, would be even more likely to commit the nation to war than would the diplomacy of the White House and the deliberation of Congress. When the motion to bring the Ludlow-La Follette-Capper resolution before the House soon after the opening of Congress was made in January, 1938, it was lost by a vote of 188 to 209. Even should the proposed amendment come before Congress, there is not a chance that two-thirds of the members of

both houses would voluntarily abandon their constitutional right to declare war.

An act of Congress of June, 1934, authorized the State department for three years to conclude reciprocal trade agreements with foreign nations, looking toward the release of world trade from the fetters which high national tariffs, quotas, currency embargoes and export restrictions had fastened upon it since the World War. On Feb. 25, 1937, Congress renewed the authorization for another period of three years. Up to the end of 1937 Secretary Hull had concluded 16 such agreements, and the most important one of all, that with Great Britain was nearing completion.

The result of the splendid work of Secretary Hull was shown not only in the improvement of trade with those countries which were parties to the agreements, but also in helping the cause of world peace through the substitution of mutually beneficial economic pacts for the jealous rivalry of nationalistic trade barriers, which, in the words of assistant secretary of State Sayre, "forge the thunderbolts of war." (See TRADE AGREEMENTS.)

United States relations with European nations during 1937 were amicable, despite a few tiffs with the rulers of Nazi Germany, who felt quite free to make the most disparaging remarks about democracies, while resenting as insults any criticisms of the Führer's pretensions and persecutions. Thus, when the mercurial mayor of New York, Fiorello H. LaGuardia, suggested that the New York World's Fair of 1939 might include in a building dedicated to the struggle for religious toleration a chamber of horrors with a statue of Hitler as exhibit No. 1, the German ambassador at Washington called upon Secretary Hull (March 4) to protest against the insult. The secretary expressed his regret informally, but remarked that he could not interfere with free speech and criticism in this country. Nor was the interpretation of democracy by the historian ambassador of the United States to Germany, Professor W. E. Dodd of Chicago, pleasing to the Nazi authorities, though Mr. Dodd refrained carefully from direct criticism of the régime.

He resigned on December 7, to be succeeded by Hugh R. Wilson, and on his return to this country spoke freely of the abuses of the Nazi government. Again Ambassador Dieckhoff protested, but was told properly that Mr. Dodd, as a private citizen, was free to speak as he pleased.

As to Latin-American relations, the chief business of the year 1937 was the implementing of the resolutions of the fruitful Inter-American Conference for the Maintenance of Peace, which met at Buenos Aires in December 1936. In April a committee on the Codification of International Law met at the Pan-American Union in Washington to formulate material on arbitration, conciliation, pecuniary claims, the definition of aggression, the application of sanctions, and in general the methods of prevention of war, to be submitted to the eighth Inter-American Conference, to be held at Lima, Peru, in December, 1938. Of the 16 commercial agreements negotiated by Secretary Hull, nine have been with the Latin-American countries. On October 21 the United States joined with Costa Rica and Venezuela in mediating a dispute between Honduras and Nicaragua, and on November 15 the President accepted a like invitation to use his good offices in a controversy between Haiti and Santo Domingo; but he rejected the proposal from Cuba to join the American republics in an attempt to mediate between the factions in the civil war in Spain. A flurry of excitement was caused in Washington early in October, when it was learned that President Getulio Vargas of Brazil, known for his sympathy during his seven years of power with the Fascist group, had declared martial law and suspended the constitution. The event was hailed in Germany, Italy and Japan, all of which countries had numerous settlers in Brazil, as an earnest of the accession of the great South American republic to the fascist bloc.



But the new constitution of Brazil, published in November, and containing a long bill of rights, showed that upheaval was more of the factional type of Latin-American "revolutions" than any servile copying of the Nazi or fascist régimes.

On the assurance to our State department by President Vargas that there was no connection between his "reforms" and the programs of the European totalitarians, and that the traditional friendship with the United States and respect for democratic institutions would be preserved, President Roosevelt, on November 11, decided on a hands-off policy, for the present at least, in regard to the Brazilian situation.

The only serious crisis in our foreign relation for 1937 came near the close of the year. In the mid-summer, the Japanese military authorities (who are not responsible to the Diet) set out in earnest to make a complete conquest of China. Without a declaration of war, and with the pretext of defending their legitimate interests, they ignored their plighted obligation under the Nine-Power Treaty of 1922 to respect the integrity and independence of the Celestial Empire, even as they had done in their seizure of Manchuria five years before. Between July 7 and November 9 they subdued five provinces of Northern China, with an area equal to that of France, Germany and Italy combined and a population of 80,000,000. On August 25 they declared a blockade of the 2,000mi. of Chinese coast and bombarded the native section

of the great international city of Shanghai, which they occupied on November 8. A week later they were approaching the capital of Nanking, from which the Chinese Government fled to a refuge 900mi. westward.

It was evident by the end of the year that, in spite of overwhelming numbers, the Chinese were unable to halt the advance of the highly trained and modernly equipped Japanese forces. And it was equally evident, from the terms offered to China after the capture of Shanghai that Japan was determined to reduce her to a vassal state. The United States Government was intent upon defending the lives and property of Americans in China and preserving the rights guaranteed by the Open Door policy and the Nine-Power Treaty. But in spite of warnings from Washington the work of destruction went on.

One American was killed and several were in imminent danger in the bombardment of Shanghai, and on September 22 Secretary Hull wrote a sharp note to Japan protesting against the air raids on defenceless cities. An advisory group of the League of Nations, backed by the United States, condemned the Japanese invasion of China, and a special conference met at Brussels on October 30, pursuant to article VII of the Nine-Power Treaty, to try to bring Japan to heel. But the conference (at which Norman Davis represented the United States) dissolved without accomplishing more than a warning to Japan that her behaviour was inconsistent with the principles of international morality.

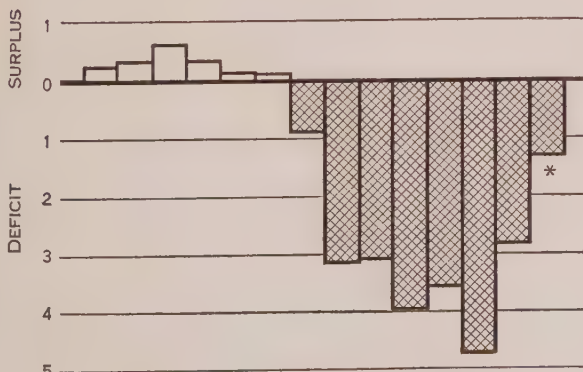
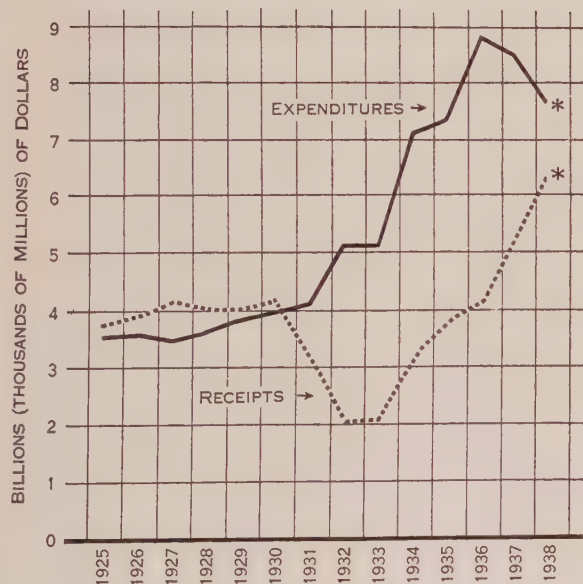
Less than three weeks later an incident occurred which threatened to involve the United States in war with Japan. The U.S. gunboat "Panay," while conveying refugees up the Yangtze river, was attacked by Japanese bombing planes on December 12 and sunk with the loss of two American lives. While the boat was sinking and the astounded passengers were seeking to reach the shore, they were subjected to machine-gun fire from boats in the river. Three Standard Oil boats were also destroyed and two British river boats were shelled.

Prompt demand for apologies, indemnification, and the assurance of the non-repetition of such outrages was made from Washington, President Roosevelt even requesting that the protest be presented to the Japanese emperor himself, as the only superior power acknowledged by the military. At first the Japanese Government denied that the attack was intentional or that the gunfire had occurred. But when the report of the "Panay's" commander and the naval board of inquiry sitting at Shanghai refuted these contentions, and the United States Government insisted on "full satisfaction," Japan sent a new note (December 24), in which she made ample apologies and gave pledges that the attacks would not happen again.

The apologies and assurances were accepted at Washington, and the incident was officially closed—not without leaving an aftermath of resentment and suspicion, which was intensified by the exhibition of the "Sinking of the 'Panay'" films in the movie houses throughout the United States. (See also ARMIES OF THE WORLD; CHINESE-JAPANESE WAR; WATER POWER; WORLD ARMAMENTS.) (D. S. MU.)

**Transportation.**—For statistics on transportation, see the articles AERONAUTICS; AVIATION, CIVIL; INTERSTATE COMMERCE COMMISSION; MOTOR-BUSES; MOTOR CARS; MOTOR TRANSPORTATION; MOTOR TRUCKS; POST OFFICE; RAILROADS; SHIPPING, MERCHANT MARINE.

**Agriculture.**—Agricultural production for 1937 was marked by increases throughout the United States. Only in five Southern States and New Mexico were crop values less than in 1936, while considerable decreases in the value of livestock and livestock products in the Middle West were more than balanced by gains in other sections of the country. National crops jumped from \$3,462,425,000 to \$3,840,035,000 in value, while the income from



\*ESTIMATES FROM THE PRESIDENT'S BUDGET MESSAGE OF JANUARY 5, 1938

RECEIPTS (....) AND EXPENDITURES (—) of the Federal Government in fiscal years ended June 30; with surplus or deficit shown below



livestock and livestock products rose from \$4,171,000,000 to \$4,280,000,000. The States leading in combined output were (ooo omitted):

California . . . \$654,150	Ohio . . . \$334,850	Pennsylvania \$274,425
Illinois . . . 506,600	Kansas . . . 324,050	Missouri . . . 271,225
Texas . . . 505,950	Wisconsin . 321,150	N. Carolina . 258,850
Iowa . . . 497,550	New York . 310,450	Michigan . . 239,200
Minnesota . 341,500	Indiana . . 290,850	Nebraska . . 235,175

For a detailed discussion of price trends and other agricultural trends throughout the United States, see the article AGRICULTURE.

Individual agricultural products are separately treated, but a comparison of the trends of leading products emphasizes how generally output increased during 1937. Thus cotton, rising from 12,407,000 to 18,746,000 bales, reached the highest figure since the World War. Cottonseed and rice also exceeded any figures during the last 20 years, and the great increase in wheat production from 626,766,000 to 873,993,000bu. resulted in the largest output in recent years. Tobacco output reached 1,505,762,000lbs. another unusually large figure. Although corn, oats, hay and potato crops broke no records, all were above average. The shifting trends of American agriculture may be seen in the production figures for these crops since 1932 (ooo omitted):

Year	Corn	Oats	Wheat	Cotton	Cottonseed	Tame Hay	Rice	Tobacco	Potatoes
1932	2,931,281 bu.	1,250,955 bu.	756,927 bu.	13,003 bales	5,784 tons	71,827 tons	41,619 bu.	1,017,317 lbs.	376,425 bu.
1933	2,399,632	733,166	551,683	13,049	5,806	66,530	37,651	1,371,131	342,306
1934	1,461,123	542,306	526,393	9,636	4,282	55,270	39,047	1,081,629	406,105
1935	2,303,747	1,194,902	626,344	10,638	4,729	78,138	38,784	1,297,155	386,380
1936	1,507,089	785,506	626,766	12,407	5,511	63,536	49,002	1,154,131	331,918
1937	2,644,995	1,146,258	873,993	18,746	8,337	73,785	53,004	1,505,762	391,159

Production in all lines was far above the 1923-32 pre-drought average with 22 field crops at 109.6, eight vegetables for manufacture at 143.5, 17 vegetables for market at 130.9, and 13 fruits at 134.1.

**Manufactures.**—Industrial statistics released during 1937 covered production in 1935. While they disclosed a gain over 1933 figures, they did not approach the pre-depression figures of 1929. Totals for the three years were:

	1935	1933	1929
Establishments . . . . .	169,111	141,769	209,862
Wage Earners . . . . .	7,378,845	6,055,736	8,821,755
Wages . . . . .	\$ 7,544,338,434	\$ 5,261,576,029	\$11,607,287,151
Value of Product . . . . .	\$45,759,763,062	\$31,358,840,338	\$69,960,909,712
Value Added . . . . .	\$19,499,269,394	\$14,538,018,361	\$31,783,009,666

The distribution of the total value among the various industrial classifications and the percentage gain registered by each over 1933 was as follows (ooo omitted):

Classification	1935	1933	% gain
Food and kindred products . . . . .	\$9,510,674	\$6,604,036	44.0
Textiles and their products . . . . .	6,060,834	4,810,960	25.9
Forest products . . . . .	1,662,221	1,127,405	47.4
Paper and allied products . . . . .	1,523,186	1,172,743	29.9
Printing, publishing and allied . . . . .	2,164,995	1,726,425	25.4
Chemical and allied products . . . . .	2,837,315	2,117,513	34.0
Products of petroleum and coal . . . . .	2,464,274	1,871,494	31.7
Rubber products . . . . .	677,959	472,744	43.3
Leather and its manufactures . . . . .	1,224,431	996,773	22.8
Stone, clay and glass products . . . . .	946,480	608,099	55.5
Iron-steel products except machinery . . . . .	4,265,327	2,580,373	65.3
Non-ferrous metals and products . . . . .	1,668,561	951,381	75.5
Machinery excluding transportation . . . . .	3,816,332	2,065,803	84.7
Transportation . . . . .	4,305,629	2,058,195	109.0
Miscellaneous . . . . .	2,631,844	2,194,296	19.9

There were eight billion-dollar industries in the United States in 1935: motor vehicles and parts (\$3,942,014,123), meat packing (\$2,362,369,081), steel work products (\$1,931,318,220),

printing and publishing (\$1,891,638,715), petroleum refining (\$1,838,621,913), women's and misses' clothing (\$1,269,624,289), bread and other bakery products (\$1,235,072,900), and cotton manufacturing (\$1,030,767,654).

**Mineral Products.**—Statistics on mineral production released in 1937 covered 1936. These showed that production was continuing to increase from the 1932 low, although it was still considerably below that of the 1920's. Of the total production of \$4,582,000,000 as compared to \$3,650,000,000 in 1935, the following led with a product valued at over \$35,000,000 each: petroleum (\$1,150,000,000), bituminous coal (\$768,000,000), pig iron (\$541,694,000), natural gas (\$480,500,000), coke (\$232,374,000), anthracite coal (\$226,000,000), cement (\$172,681,000), gold (\$150,959,000), iron ore (\$131,741,000), stone (\$129,276,000), copper (\$112,499,000), sand and gravel (\$84,597,000), natural gasoline (\$81,750,000), ferro-alloys (\$69,135,000), zinc (\$49,180,000), silver (\$47,759,000), aluminium (\$41,612,000), lead (\$35,688,000), and sulphur (\$35,400,000). Comparative statistics regarding the quantity of single products may be found under articles on individual metals and non-metals.

**Foreign Commerce.**—United States trade increased rapidly during 1937. Exports valued at \$2,455,978,000 in 1936 already totalled \$3,026,872,000 by Dec. 1, 1937 and imports jumped from \$2,422,592,000 to \$2,875,202,000, marking the largest percentage

increase since the low point of 1932.

This expanding trade was accompanied by an increase in the proportion of exports over imports. During the first 11 months of 1936, the balance in favour of exports was only \$33,386,000

Total Imports and Exports 1932-1937  
(ooo omitted)

Year	Export Total	% Increase	Import Total	% Increase
1932 . . . . .	\$1,611,016	..	\$1,322,774	..
1933 . . . . .	1,674,994	3.9	1,440,559	9.6
1934 . . . . .	2,132,800	26.5	1,655,055	14.2
1935 . . . . .	2,282,874	7.0	2,047,485	23.8
1936 . . . . .	2,455,978	7.6	2,422,592	18.3
*1937 . . . . .	3,339,326	36.0	3,198,972	32.0

\*Including December estimate on basis of percentage increase for first 11 months.

as compared with \$151,670,000 from January to December 1, 1937. The gain was more notable as during the early months of 1937 there was an unfavourable balance which reached a high of \$50,909,000 during June. The trend turned in August and during October exports exceeded imports by \$108,408,000. Import duties collected for the period January through November jumped from \$363,081,000 in 1936 to \$437,412,000 in 1937, but over half the imports entered free.

The character of United States trade varied greatly according to area. The greatest change during 1937 was in Canadian trade, an unfavourable balance of \$2,362,000 being converted into a favourable balance of \$14,784,000. Exports to South America also gained sufficiently to pass the imports in value. A favourable balance with Central America, Mexico and the West Indies was further increased, but imports from Asia increased much more rapidly than exports to widen a balance already unfavourable. The outstanding feature in European trade was the small increase in imports, those from the United Kingdom actually declining despite the general trade increase. Statistics for the first 11 months of 1936 and 1937 by origin of imports and destination of exports was as follows (ooo omitted; exports listed first):



Year	N. America	S. America	Europe	Asia	Oceania	Africa
1936 . . .	\$56,318	\$18,806	\$ 98,832	\$38,849	\$5,352	\$ 8,208
1937 . . .	71,064	29,077	144,799	46,993	9,510	12,638
1936 . . .	51,102	23,146	64,678	52,156	1,547	3,769
1937 . . .	43,539	26,738	66,998	78,871	2,186	4,892

Examination of the leading items of export and import according to value reveals that petroleum and unmanufactured cotton are the main items of export and that the greatest dependence is upon tropical and Oriental raw materials and wood pulp. The following products led the import and export lists for the first 11 months of 1937:

Exports		Imports	
Product	Value	Product	Value
Petroleum . . .	\$347,540,265	Crude Rubber . . .	\$212,372,835
Cotton (unman.) . .	328,737,821	Cane Sugar . . .	160,127,712
Automobiles, etc. . .	307,135,229	Coffee . . .	139,069,653
Indus. Machinery . .	216,391,912	Newsprint . . .	111,357,709
Iron (semiman.) . .	213,597,669	Silk (unman.) . .	102,348,694
Tobacco (unman.) . .	113,748,562	Tin Bars . . .	95,040,374
Elect. Machinery . .	102,788,955	Wool (unman.) . .	94,482,512
Copper . . .	86,939,191	Wood Pulp . . .	90,936,495
Agric. Machinery . .	68,671,491	Furs . . .	83,331,155
Coal . . .	64,083,568	*Vegetable Oil . .	81,720,967
Steel Manuf. . .	60,616,729	Hides and Skins . .	67,501,399
Steel Adv. Manuf. . .	47,401,414	Corn . . .	56,069,106
Cotton Manuf. . .	40,011,467	Cocoa Beans . . .	50,824,792

\*Non-edible rather than edible vegetable oil.

For a special aspect of United States commerce, *see* TRADE AGREEMENTS and TARIFFS.

**Labour.**—For labour statistics, *see* the articles CHILD LABOUR; LABOUR; STRIKES AND LOCK-OUTS; UNEMPLOYMENT; WAGES AND HOURS.

**Finance and Banking.**—Financial statistics appear in separate articles such as BANKING; BUDGET; EXCESS PROFITS TAX; GOLD RESERVES AND GOLD STANDARD; GOVERNMENT EXPENDITURES; INCOME TAX; NATIONAL DEBTS; NATIONAL INCOME; PROCESSING TAX; SALES TAX; WEALTH AND INCOME, DISTRIBUTION OF.

**Defence.**—The size of both the U.S. Army and U.S. Navy increased during 1937. The regular army had 178,101 men of whom 164,993 were enlisted on July 1, while there were 14,110 officers and 178,051 enlisted men in the National Guard and 111,169 officers and 3,189 enlisted men in Reserve Forces. There were 100,810 enlisted men in the navy and approximately 17,000 in the Marines. Expenditures for the fiscal year 1936–37 exclusive of outlay for non-military purposes were: War Department, \$372,774,887 and Navy Department, \$497,083,719. At that time the United States had 15 capital ships, three aircraft carriers, 27 cruisers, 197 destroyers (158 over-age) and 83 submarines (54 over-age) and funds were appropriated for two capital ships, three aircraft carriers, ten cruisers, 55 destroyers and 17 submarines. For additional information regarding American military and naval forces, *see* AIR FORCES; ARMIES OF THE WORLD; MARINE CORPS; NATIONAL GUARD; NAVIES OF THE WORLD; WORLD ARMAMENTS.

**United States Government Departments and Bureaus:** *see* GOVERNMENT DEPARTMENTS AND BUREAUS.

**United States Housing Authority:** *see* HOUSING; MUNICIPAL GOVERNMENT.

**Universal Language.** Among artificial languages, Esperanto at present holds the field. According to the estimate of its advocates, it has some 500,000 users—or at least adherents; but it is naturally hard to find a reliable basis of calculation.

An extreme form of the view that an artificial language should be a simplification of languages already existing is the suggestion

that a simplified form of English should serve as interlanguage. The simplification suggestions are of two kinds: (1) spelling reform (Anglic); (2) restriction of vocabulary (basic English). The objection that, if an artificial language ever came to life, it would develop irregularities leading to dialectal divergence, seems to be answered by British and American English; so little divergence in four centuries can hardly be regarded as serious.

The objection that the language would be useless for literature because of its lack of associations is a fallacy. For generations we learned Greek myths with Latin names, Jupiter, Venus, Cupid; the associations were attached to these names as truly as if the Greek names had been used. Language conservatism is so strong that not improbably the interlanguage will be some mother-tongue modified by the cumulative effect of such partial movements as the attempt now being made in Germany to standardize technical terms.

(H. O. Co.)

**Universal Service:** *see* ARMIES OF THE WORLD: *Military Service.*

**Universities and Colleges.** The terms “university” and “college” are used in the United States more or less interchangeably to cover a widely diversified type of higher education. The U.S. Office of Education lists for 1937 1,704 higher educational institutions. The typical four-year liberal arts college is sponsored either directly or indirectly by one of the many religious denominations, or governed by a self-perpetuating board of trustees that has attained independent status by charter. The operating expenses of such institutions are met by interest from invested funds, tuition payments of students, and outright gifts of one type or another. The oldest colleges began almost with the beginning of the country. Provision was made for the establishment of State-supported universities at the time of the enactment of the Ordinance of 1787. The provisions of the Louisiana Purchase gave still further impetus to this movement. With the passage of the Morrill Act in 1862, provision was made for the establishment in each State at public expense of the so-called “land grant” colleges of agriculture and mechanic arts. Almost all the States maintain one or more special institutions for the preparation of teachers at public expense. Municipal colleges or universities are common. These are supported by city tax as distinguished from a tax levied by the State or Federal government. Among the well-known institutions of this class are the College of the City of New York, the University of Cincinnati, and Wayne university, Detroit, etc.

There are many comprehensive universities that offer not only work in arts and sciences leading to the baccalaureate and higher degrees, but a range of courses which prepare for such professions as law, medicine, dentistry, journalism, business administration, and engineering.

More than five hundred (553) junior colleges are now in operation. Some of these mark the determination on the part of the four-year liberal arts colleges to concentrate their efforts on the first two years. Others have been created by municipal agencies through public taxation in order to provide two years of work beyond the high school. The private junior colleges report an attendance of 43,045. The public institutions of this class enroll 93,578 students.

American colleges tend to become alike. It must not be forgotten that a distinctive feature of higher education in America is the ease with which students are admitted in the first place, and the readiness and extent of student transfer between institutions during the college career. This great mobility of the student population no doubt contributes much to the fact that there is



a marked degree of overlapping among all types of higher institutions. The University of Chicago reports that 30% of its undergraduate students are admitted as transfers after attending a junior college. In recent years many two-year State normal schools have become degree-granting teachers' colleges. The colleges of agriculture and mechanic arts have, with the passing of the years, so modified their curriculums and staff as to attract many students whose interests and capacities are identical with those of students going to so-called liberal arts or humanistic universities. On the other hand, liberal arts colleges have expanded in the direction of providing "practical" work in such fields as commerce, journalism, and the applied arts. Much of the current discussion about the purpose of the college centres upon this change. President Hutchins, of the University of Chicago, has gone so far in his criticism of the present tendency as to recommend a return to the mediaeval trivium and quadrivium.

*Teacher Training.*—With the growth in secondary education has come a great increase in the demand for trained teachers. Practically all colleges of the country have sought to satisfy this demand. Whereas the typical normal school has expanded its offerings so as to grant both undergraduate and graduate degrees to prospective teachers, the colleges have sought to meet the technical requirements for teachers by providing courses in education to satisfy teacher certification requirements. Such work is offered on both the undergraduate and the graduate levels. This overlapping and expansion of function has come about so gradually that only now is its full extent being generally recognized. There is much reason to believe that many colleges and universities will move in the direction of a closer co-ordination of these diverse interests within each institution. Recently Harvard and Chicago have reorganized their programs of teacher training so as to provide for a better adjustment between subject matter and technical preparation of a teacher. The tendency toward recognition of the highly specialized function of the teacher by designation of a special graduate degree is increasing.

*Voluntary Associations.*—Without entering the field of professional education, it may be said that, in attempting to understand the American colleges and universities, it is important to recognize the fact that few centralizing governmental agencies have power to inspect or modify these educational institutions. There are, however, very powerful standardizing agencies that are wholly co-operative and voluntary. These voluntary agencies, such as the Association of American Universities (which includes 32 important institutions, distributed geographically from the East Coast to the West, and varying in size from Columbia and Minnesota to Princeton and Johns Hopkins), constantly strive for improvement in the upper reaches of higher education. Through committees, standards are adopted, ideas are promulgated, and approved lists of colleges are published. Voluntary regional associations, such as the North Central Association of Colleges and Secondary Schools, are highly influential. Other such regional associations are the New England Association of Colleges and Secondary Schools, the Middle States Association of Colleges and Secondary Schools, the Southern Association of Colleges and Secondary Schools, and the Western Association of Colleges and Secondary Schools.

*The College and the Individual.*—The college entrance examination board has been a very effective agent in the selection of college students for a restricted list of colleges situated chiefly in the Eastern States. Other students have been admitted by certificate showing graduation from the secondary school. In view of the close working arrangements between the colleges and the secondary schools, either of these methods should afford a thoroughly satisfactory basis for selecting the right students for each college.

Scientific scrutiny of individual differences among the students admitted to the various colleges indicates that it may be necessary either to supplement present standards of selection in such manner as to assure a more homogeneous group of students in each class, or frankly to recognize the wide differences among individuals by making special provision for a wider sampling of student material. The general undergraduate colleges recently established at the universities of Minnesota and Florida, and the general studies division at Yale on the graduate level, are instances of institutional recognition of these broad differences in capacity and purpose.

*College Testing.*—Interest in testing programs for the college area has spread widely. Tens of thousands of students in hundreds of colleges are being tested annually by the Co-operative Test Service which operates under the general direction of the American Council on Education. The Carnegie Foundation for the Advancement of Teaching is reporting its findings after eight years of study of 17,000 students enrolled in Pennsylvania colleges. The achievement of students, as measured by an appraisal of their enduring knowledge, differed much more widely than had been anticipated. It was found that some colleges were very much more successful than others in selecting and holding competent students, and that the relative standing of individual members of the same class differed unbelievably. For example, the spread of achievement in the senior class was so great that the weakest seniors were no better than the best freshmen. Indeed some of the best high school students stood higher than the poorest college seniors. Steps are being taken in some of the colleges to capitalize this information by a shift of emphasis in the selection and advancement of students.

Chicago, Columbia, and Harvard, and many smaller colleges are using comprehensive examinations as a means of improvement. It is the fashion to adopt a "plan." The Chicago plan, the Columbia plan, the Harvard plan, the Princeton plan, the Rollins plan, the Yale plan, and so on *ad infinitum*, fill the pages of college catalogues. While they differ somewhat in detail, they are inspired by a common desire to modify the offerings of the college to conform to the change in certain social, economic, and scientific aspects of life and to select students who can better profit by such offerings. This ferment is widespread. Almost every college has one or more committees at work on the task of improving the effectiveness of its undertaking.

*Support of Colleges.*—Last year the Federal government, through the National Youth Administration, provided employment for many students who were thus enabled to continue their education during a period of severe economic strain. In ever-growing numbers, parents make the personal adjustments necessary in order to send their children to college. Donors are still giving large sums of money to higher education. Tax-levying bodies, on the whole, have been generous. The fact that more than 79,000 graduate students were enrolled during the year 1936 is one measure of the student persistence in higher education. Medical schools are unable to admit all applicants for study. Extension courses, Saturday courses, summer courses are crowded.

The current scene in American higher education displays a growing recognition that individuals differ from one another in mental equipment and in the lives they lead. During 1937, steps were taken at many points to make the needed administrative adjustments to decrease the rigidity of requirements at all levels and to focus attention upon the outcomes of education as reflected in the students themselves.

(W. A. J.)

The following six pages carry a selected list of universities and colleges throughout the United States, with location, year founded, chief executive, enrolment, size of faculty, endowment and number of library volumes.



Institution	Location	Year Founded	Chief Executive	Full Time Students	Full and Part Time Students	Faculty	Endowment	Library Volumes
Adelphi college	Garden City, N. Y.	1896	Frank D. Blodgett	398	429	31	\$ 894,540	34,224
Agnes Scott college	Decatur, Ga.	1889	James R. McCain	483	487	52	1,600,000	30,000
Akron, university of	Akron, Ohio	1870	H. E. Simmons	1,214	1,761	94	148,209	38,200
Alabama college	Montevallo, Ala.	1896	A. F. Harman	813	1,218	90	582,722	28,923
Alabama Polytechnic inst.	Auburn, Ala.	1872	Luther N. Duncan	2,682	4,478	156	..	55,000
Alabama, university of	University, Ala.	1831	Richard C. Foster	4,907	6,450	300	4,681,539	138,508
Albany college	Albany, Ore.	1867	Thomas W. Bibb	242	292	30	262,012	13,500
Albertus Magnus college	New Haven, Conn.	1925	Sister M. Anacletus	166	261	37	500,000	11,500
Albion college	Albion, Mich.	1835	John L. Seaton	749	760	46	1,550,000	42,364
Albright college	Reading, Pa.	1856	J. Warren Klein	376	519	28	564,269	20,000
Alfred university	Alfred, N. Y.	1836	J. Nelson Norwood	607	735	59	1,021,000	53,000
Allegheny college	Meadville, Pa.	1815	William P. Tolley	619	702	50	1,250,000	104,000
Alma college	Alma, Mich.	1886	Harry M. Crooks	300	325	21	760,000	44,475
American International col.	Springfield, Mass.	1885	Chester S. McGown	403	424	33	261,801	23,018
American university	Washington, D. C.	1893	Joseph M. M. Gray	525	1,846	43	918,795	38,640
Amherst college	Amherst, Mass.	1821	Stanley King	835	837	72	9,464,270	191,243
Antioch college	Yellow Springs, Ohio	1853	Algo D. Henderson	680	694	59	321,619	45,332
Arizona, university of	Tucson, Ariz.	1885	Paul S. Burgess	2,224	2,897	188	47,716	103,000
Arkansas State college	Jonesboro, Ark.	1910	V. C. Kays	547	1,175	35	..	10,000
Arkansas, university of	Fayetteville, Ark.	1871	John C. Futrall	2,421	3,039	250	136,666	111,240
Armour Inst. of Technology	Chicago, Ill.	1892	Willard E. Hotchkiss	915	981	89	400,000	40,000
Augustana college	Rock Island, Ill.	1860	Conrad Bergendoff	574	841	50	1,064,180	62,085
Augustana college	Sioux Falls, S. D.	1851	Clemens M. Granskon	403	534	34	448,660	11,500
Baker university	Baldwin City, Kan.	1858	Nelson P. Horn	307	324	30	1,000,000	64,129
Baldwin-Wallace college	Berea, Ohio	1845	Louis C. Wright	599	675	53	1,570,098	15,000
Bates college	Lewiston, Me.	1864	Clifton D. Gray	669	883	45	1,713,189	65,744
Battle Creek college	Battle Creek, Mich.	1923	Emil Leffler	237	338	25	1,017,000	15,597
Baylor university	Waco, Texas	1845	Pat M. Neff	1,880	2,511	100	1,471,149	68,015
Beloit college	Beloit, Wis.	1846	Irving Maurer	578	583	48	2,458,900	91,000
Bennett college for women	Greensboro, N. C.	1873	David D. Jones	302	305	21	603,280	12,250
Bennington college	Bennington, Vt.	1932	Robert D. Leigh	278	278	47	104,161	11,000
Berea college	Berea, Ky.	1855	William J. Hutchins	750	818	59	3,233,249	68,046
Bethany college	Bethany, W. Va.	1840	Wilbur H. Cramblet	359	359	34	1,749,559	21,223
Bethany college	Lindsborg, Kan.	1881	Ernst F. Pihlblad	288	362	35	353,714	18,000
Birmingham-Southern college	Birmingham, Ala.	1856	..	827	1,314	52	750,000	40,000
Bishop college	Marshall, Texas	1881	Joseph J. Rhoads	317	617	18	..	14,500
Blue Mountain college	Blue Mountain, Miss.	1873	Lawrence T. Lowrey	290	452	26	304,000	12,500
Boston college	Newton, Mass.	1863	Louis J. Gallagher	2,364	3,224	229	..	140,000
Boston university	Boston, Mass.	1869	Daniel L. Marsh	6,217	11,061	594	4,055,248	170,400
Bowdoin college	Brunswick, Me.	1794	Kenneth C. M. Sills	628	628	65	7,800,000	165,000
Bowling Green State univ.	Bowling Green, Ohio	1910	H. B. Williams	1,979	1,824	73	..	44,000
Bradley Polytechnic inst.	Peoria, Ill.	1896	Frederic R. Hamilton	742	1,165	53	2,573,773	37,500
Brenau college	Gainesville, Ga.	1878	H. J. Pearce, Sr.	373	443	32	513,770	13,690
Brigham Young university	Provo, Utah	1875	Franklin S. Harris	1,952	2,400	107	..	91,350
Brooklyn college	Brooklyn, N. Y.	1930	William A. Boylan	4,955	11,404	464	..	33,285
Brooklyn, Polytech. inst. of	Brooklyn, N. Y.	1854	Harry S. Rogers	496	2,273	91	1,600,000	19,000
Brown university	Providence, R. I.	1764	Henry M. Wriston	1,650	1,660	164	10,304,993	472,539
Bryn Mawr college	Bryn Mawr, Pa.	1885	Marion E. Park	534	539	85	6,400,000	147,020
Bucknell university	Lewisburg, Pa.	1846	Arnaud C. Marts	1,210	1,517	74	1,303,863	68,398
Buffalo, university of	Buffalo, N. Y.	1846	Samuel P. Capen	1,547	4,547	505	5,415,484	75,757
Butler university	Indianapolis, Ind.	1855	James W. Putnam	1,330	2,185	112	1,634,291	67,000
California Inst. of Tech.	Pasadena, Calif.	1891	Robert A. Millikan	829	850	258	8,000,000	39,233
California, university of	Berkeley, Calif.	1868	Robert G. Sproul	22,955	26,923	1,813	20,585,105	1,119,000
Calvin college	Grand Rapids, Mich.	1876	Ralph Stob	403	403	20	145,000	21,450
Canisius college	Buffalo, N. Y.	1870	James P. Sweeney	734	1,485	55	..	15,232
Capital university	Columbus, Ohio	1850	Otto Mees	683	812	70	566,311	23,250
Carleton college	Northfield, Minn.	1866	Donald J. Cowling	801	822	61	2,894,151	110,000
Carnegie Inst. of Tech.	Pittsburgh, Pa.	1900	Robert E. Doherty	2,300	4,368	288	16,369,382	25,000
Carroll college	Waukesha, Wis.	1846	William A. Ganfield	549	583	27	798,077	15,400
Carson-Newman college	Jefferson City, Tenn.	1851	James T. Warren	429	535	26	520,144	15,000
Carthage college	Carthage, Ill.	1870	Rudolph G. Schulz, Jr.	270	301	26	880,000	23,838
Case School of Ap. Science	Cleveland, Ohio	1880	William E. Wickenden	851	1,474	86	4,600,000	26,000
Catawba college	Salisbury, N. C.	1851	Howard R. Omwake	405	653	59	376,594	15,000
Catholic university	Washington, D. C.	1887	Joseph M. Corrigan	1,887	3,640	230	3,000,000	324,770
Centenary college	Shreveport, La.	1825	Pierce Cline	512	708	42	675,000	18,200
Central college	Fayette, Mo.	1854	Robert H. Ruff	605	705	41	1,321,000	31,386
Centre college	Danville, Ky.	1819	James H. Hewitt	352	374	28	1,236,890	25,303
Charleston, college of	Charleston, S. C.	1785	Harrison Randolph	339	527	21	436,500	13,407
Chattanooga, university of	Chattanooga, Tenn.	1886	Alexander Guerry	382	581	34	938,300	22,827
Chicago, university of	Chicago, Ill.	1890	Robert M. Hutchins	7,705	10,296	840	67,237,276	1,196,118
Cincinnati, university of	Cincinnati, Ohio	1870	Raymond Walters	4,169	11,135	647	9,260,259	352,091
Citadel, The	Charleston, S. C.	1842	C. P. Summerall	986	986	61	..	14,000
Clark university	Atlanta, Ga.	1870	Matthew S. Davage	316	345	21	..	..
Clark university	Worcester, Mass.	1887	Wallace W. Atwood	339	511	42	..	149,208
Clarke college	Dubuque, Iowa	1843	Sister Mary Antonia	273	584	47	228,850	17,000
Clarkson College of Tech.	Potsdam, N. Y.	1896	James S. Thomas	422	422	31	1,525,201	9,500
Clemson Agricultural col.	Clemson College, S. C.	1889	Enoch W. Sikes	1,869	2,125	136	58,539	39,713
Coe college	Cedar Rapids, Iowa	1880	Harry M. Gage	638	694	53	1,700,000	42,473
Coker college	Hartsville, S. C.	1908	C. Sylvester Green	237	237	27	489,280	14,500
Colby college	Waterville, Me.	1813	Franklin W. Johnson	618	618	50	2,285,388	84,326
Colgate university	Hamilton, N. Y.	1819	George B. Cutten	1,064	1,064	97	5,500,000	109,000



Institution	Location	Year Founded	Chief Executive	Full Time Students	Full and Part Time Students	Faculty	Endowment	Library Volumes
Colorado college	Colorado Springs, Colo.	1874	Thurston J. Davies	600	781	68	\$2,568,000	103,000
Colorado school of mines	Golden, Colo.	1874	Melville F. Coolbaugh	711	729	55	..	29,894
Colorado State Agr. col.	Fort Collins, Colo.	1877	Charles A. Lory	1,782	3,009	141	..	78,325
Colorado, university of	Boulder, Colo.	1876	George Norlin	3,684	7,341	339	..	249,241
Columbia college	Dubuque, Iowa	1839	Thomas Conroy	372	772	45	1,507,199	49,288
Columbia university	New York, N. Y.	1754	Nicholas M. Butler	14,683	32,245	2,583	86,688,931	1,563,100
Concordia college	Moorhead, Minn.	1891	J. N. Brown	490	498	37	590,120	22,300
Connecticut col. for women	New London, Conn.	1911	Katharine Blunt	716	735	73	1,322,100	60,937
Connecticut State college	Storrs, Conn.	1881	Albert N. Jorgensen	899	975	111	289,696	40,000
Converse college	Spartanburg, S. C.	1889	Edward M. Gwathmey	335	336	37	650,000	25,275
Cornell college	Mount Vernon, Iowa	1851	Herbert J. Burgstahler	597	609	45	2,150,466	50,000
Cornell university	Ithaca, N. Y.	1865	Edmund E. Day	6,439	8,122	981	29,882,275	917,943
Creighton university	Omaha, Neb.	1878	Patrick H. Mahan	1,484	1,966	221	3,007,133	87,492
Culver-Stockton college	Canton, Mo.	1853	John H. Wood	210	320	18	1,085,932	23,000
Dakota-Wesleyan university	Mitchell, S. D.	1885	Leon H. Sweetland	317	439	32	570,143	23,721
Dartmouth college	Hanover, N. H.	1769	Ernest M. Hopkins	2,442	2,441	261	17,209,302	418,000
Davidson college	Davidson, N. C.	1836	Walter L. Lingle	666	724	45	973,474	38,226
Dayton, university of	Dayton, Ohio	1850	Walter C. Tredtin	614	1,158	45	..	32,450
Delaware, university of	Newark, Del.	1833	Walter Hulihan	818	1,180	96	..	68,000
Denison university	Granville, Ohio	1831	Avery A. Shaw	891	962	65	3,333,300	80,000
Denver, university of	Denver, Colo.	1864	David S. Duncan	1,837	3,877	247	2,357,768	82,615
DePaul university	Chicago, Ill.	1898	Clyde E. Wildman	1,961	7,337	161	1,150,000	18,966
DePauw university	Greencastle, Ind.	1837	Albert H. Poetker	1,219	1,229	83	5,657,733	83,659
Detroit, university of	Detroit, Mich.	1877	Fred P. Corson	1,969	3,405	173	1,640,080	88,600
Dickinson college	Carlisle, Pa.	1783	William S. Nelson	543	544	35	1,030,999	54,955
Dillard university	New Orleans, La.	1930	J. E. Taylor	214	311	20	..	..
Doane college	Crete, Neb.	1872	D. W. Morehouse	226	229	25	334,630	26,912
Drake university	Des Moines, Iowa	1881	Parke R. Kolbe	1,113	1,839	85	1,646,927	71,000
Drexel institute	Philadelphia, Pa.	1891	Thomas W. Nadel	1,651	1,875	115	3,089,248	50,000
Drury college	Springfield, Mo.	1873	William P. Few	400	410	33	1,092,090	54,090
Duke university	Durham, N. C.	1838	J. J. Callahan	3,295	5,597	375	29,880,267	395,158
Duquesne university	Pittsburgh, Pa.	1878	William C. Dennis	1,357	3,694	147	2,000,000	24,275
Earlham college	Richmond, Ind.	1847	Timothy Lehmann	386	401	37	1,419,841	53,237
Elmhurst college	Elmhurst, Ill.	1871	William S. A. Pott	275	286	26	99,065	27,038
Elmira college	Elmira, N. Y.	1852	Thomas W. Steen	373	378	48	950,000	44,000
Emmanuel Missionary college	Berrien Springs, Mich.	1874	James N. Hillman	405	405	49	..	16,847
Emory and Henry college	Emory, Va.	1836	Harvey W. Cox	285	360	18	355,370	17,500
Emory university	Atlanta, Ga.	1836	John B. Kelly	1,121	1,756	285	5,469,000	130,000
Emporia, college of	Emporia, Kan.	1882	Robert C. Grier	311	311	25	538,000	21,000
Ersine college	Due West, S. C.	1839	F. Marion Smith	362	362	25	362,000	17,000
Evansville college	Evansville, Ind.	1854	Homer R. Dunathan	287	500	30	400,000	16,500
Findlay college	Findlay, Ohio	1881	Thomas E. Jones	251	297	20	432,342	12,550
Fisk university	Nashville, Tenn.	1865	Edward Conradi	424	595	45	1,509,434	35,000
Florida State col. for women	Tallahassee, Fla.	1905	John J. Tigert	1,738	2,501	128	100,000	56,563
Florida, university of	Gainesville, Fla.	1853	Robert I. Gannon	3,138	4,725	161	261,796	52,270
Fordham university	New York, N. Y.	1841	John A. Schaeffer	3,468	7,342	368	504,100	167,000
Franklin and Marshall col.	Lancaster, Pa.	1787	David M. Edwards	817	826	42	968,624	66,900
Friends university	Wichita, Kan.	1898	Bennette E. Geer	332	476	35	600,000	17,000
Furman university	Greenville, S. C.	1821	M. M. Pearce	924	1,291	66	613,493	25,000
Geneva college	Beaver Falls, Pa.	1848	Cloyd H. Marvin	584	792	37	735,000	22,000
George Washington univ.	Washington, D. C.	1821	Henry N. Sherwood	1,491	6,623	340	2,249,429	106,951
Georgetown college	Georgetown, Ky.	1829	Arthur A. O'Leary	304	526	25	..	15,000
Georgetown university	Washington, D. C.	1789	Marion L. Brittain	2,135	2,309	507	..	167,174
Georgia School of Technology	Atlanta, Ga.	1888	Guy H. Wells	2,314	2,443	152	425,000	30,010
Georgia State col. for women	Milledgeville, Ga.	1889	Frank R. Reade	1,364	1,364	96	..	25,000
Georgia State Woman's col.	Valdosta, Ga.	1906	Harmon L. Caldwell	287	308	20	..	17,000
Georgia, university of	Athens, Ga.	1785	Henry W. A. Hanson	3,181	4,867	195	752,163	106,480
Gettysburg college	Gettysburg, Pa.	1832	David A. Robertson	638	708	44	760,000	55,000
Goucher college	Baltimore, Md.	1885	Luther L. Gobbel	668	685	72	2,468,969	62,428
Greensboro college	Greensboro, N. C.	1838	John S. Nollen	302	302	26	391,000	14,206
Grinnell college	Grinnell, Iowa	1846	Weir C. Ketler	783	800	66	2,107,381	90,600
Grove City college	Grove City, Pa.	1876	Clyde A. Milner	890	951	48	755,978	33,670
Guilford college	Guilford College, N. C.	1834	O. J. Johnson	322	351	23	588,793	16,575
Gustavus Adolphus college	St. Peter, Minn.	1862	Frederick C. Ferry	458	459	28	553,096	24,330
Hamilton college	Clinton, N. Y.	1812	Charles N. Pace	429	429	44	4,123,566	160,000
Hamline university	St. Paul, Minn.	1854	J. D. Eggleston	580	590	42	1,686,056	36,000
Hampden-Sidney college	Hampden-Sidney, Va.	1775	Arthur Howe	351	351	19	334,436	30,918
Hampton institute	Hampton, Va.	1868	Albert G. Parker, Jr.	877	1,545	95	10,214,571	50,098
Hanover college	Hanover, Ind.	1827	Jefferson D. Sandefer	282	282	22	624,520	35,375
Hardin-Simmons university	Abilene, Texas	1890	James B. Conant	639	903	40	1,483,000	25,000
Harvard university	Cambridge, Mass.	1636	John W. Creighton	8,138	9,911	1,980	128,827,000	3,602,040
Hastings college	Hastings, Neb.	1882	William W. Comfort	518	758	44	804,475	19,500
Haverford college	Haverford, Pa.	1833	David L. Crawford	335	335	45	4,000,000	126,000
Hawaii, university of	Honolulu, Hawaii	1907	Charles E. Miller	1,963	3,449	144	..	77,462
Heidelberg college	Tiffin, Ohio	1850	John H. Reynolds	345	345	32	908,755	27,000
Hendrix college	Conway, Ark.	1884	Willfred O. Mauck	353	355	32	1,005,971	33,500
Hillsdale college	Hillsdale, Mich.	1844	Kenneth I. Brown	402	416	38	828,208	34,000
Hiram college	Hiram, Ohio	1850	William A. Eddy	352	367	28	1,252,614	30,329
Hobart college	Geneva, N. Y.	1822	Bessie C. Randolph	378	378	41	1,496,000	97,172
Hollins college	Hollins, Va.	1842	Francis J. Dolan	318	320	37	398,321	22,600
Holy Cross, college of the	Worcester, Mass.	1843	..	1,245	1,245	91	..	110,000



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Hood college	Frederick, Md.	1893	Henry I. Stahr	453	477	50		19,000
Hope college	Holland, Mich.	1866	Wynand Wichers	472	472	30	\$ 850,000	31,000
Houghton college	Houghton, N. Y.	1923	James S. Luckey	389	403	37	192,365	10,355
Howard college	Birmingham, Ala.	1842	T. V. Neal	627	972	46	750,000	20,000
Howard university	Washington, D. C.	1867	Mordecai W. Johnson	1,279	1,874	266	910,127	88,722
Hunter college	New York, N. Y.	1870	Eugene A. Colligan	7,000	12,226	613		76,042
Huntingdon college	Montgomery, Ala.	1909	Walter D. Agnew	331	425	38	370,000	13,331
Huron college	Huron, S. D.	1883	Frank L. Eversull	251	332	22	958,779	10,500
Idaho, college of	Caldwell, Ida.	1891	Orma J. Smith	362	424	30	542,632	14,000
Idaho, university of	Moscow, Ida.	1889	Harrison C. Dale	2,756	3,623	192		95,000
Illinois college	Jacksonville, Ill.	1829	Harold C. Jaquith	388	388	27	1,186,370	31,300
Illinois, university of	Urbana, Ill.	1867	Arthur C. Willard	13,382	16,085	1,320		1,200,000
Illinois Wesleyan university	Bloomington, Ill.	1850	Harry W. McPherson	677	763	51	1,142,262	37,000
Immaculata college	Immaculata, Pa.	1920	Vincent L. Burns	242	407	37		11,270
Immaculate Heart college	Los Angeles, Calif.	1906	Sister M. Redempta	470	547	30		14,260
Incarinate Word college	San Antonio, Texas	1881	Sister M. Columkille	414	828	38	1,157,442	25,818
Indiana university	Bloomington, Ind.	1820	William L. Bryan	5,415	6,943	351		206,849
International Y.M.C.A. col.	Springfield, Mass.	1885	Ernest M. Best	506	596	42	1,169,096	23,018
Iowa State Agric. college	Ames, Iowa	1858	Charles E. Friley	5,423	6,397	386		235,000
Iowa State, university of	Iowa City, Iowa	1847	Eugene A. Gilmore	5,145	10,756	525	808,183	392,500
Iowa Wesleyan college	Mount Pleasant, Iowa	1842	Harry D. Henry	217	280	20	464,339	14,546
James Millikin university	Decatur, Ill.	1901	John C. Hessler	473	511	43	1,189,227	27,200
Jamestown college	Jamestown, N. D.	1883	B. H. Kroeze	336	347	27	1,013,412	16,500
John B. Stetson university	Deland, Fla.	1883	William S. Allen	716	932	62	909,919	36,000
John Carroll university	Cleveland, Ohio	1886	William M. Magee	489	728	41	1,725,000	38,000
Johns Hopkins university	Baltimore, Md.	1867	Isaiah Bowman	2,020	5,908	646	29,874,437	500,000
Johnson C. Smith university	Charlotte, N. C.	1867	Henry L. McCrorey	321	673	22	1,751,719	20,250
Judson college	Marion, Ala.	1838	L. G. Cleverdon	201	216	30	527,575	14,409
Juniata college	Huntington, Pa.	1876	Charles C. Ellis	415	498	46	696,562	50,000
Kalamazoo college	Kalamazoo, Mich.	1833	Stewart G. Cole	350	353	25	1,334,215	28,000
Kansas State coll. of agr.	Manhattan, Kan.	1863	Francis D. Farrell	3,869	4,454	325	505,509	110,000
Kansas, university of	Lawrence, Kan.	1865	E. H. Lindley	4,383	5,237	250	250,000	257,869
Kent State university	Kent, Ohio	1910	James O. Engleman	1,975	3,338	136		58,400
Kentucky State Indus. col.	Frankfort, Ky.	1896	Rufus B. Atwood	482	1,087	27		7,500
Kentucky, university of	Lexington, Ky.	1865	Frank L. McVey	3,244	5,305	272	185,000	158,282
Kenyon college	Gambier, Ohio	1824	William F. Peirce	304	304	32	2,018,423	34,723
Knox college	Galesburg, Ill.	1837	Carter Davidson	626	629	53	1,884,775	40,000
Knoxville college	Knoxville, Tenn.	1875	Samuel M. Laing	265	320	20		10,200
Lafayette college	Easton, Pa.	1824	William M. Lewis	902	911	92	3,835,000	87,083
Lake Forest college	Lake Forest, Ill.	1857	Herbert M. Moore	354	361	28	1,515,000	45,777
Lane college	Jackson, Tenn.	1882	James F. Lane	461	625	20		6,000
LaSalle college	Philadelphia, Pa.	1863	Brother E. Anselm	371	445	31	650,000	10,000
Lawrence college	Appleton, Wis.	1847		733	739	58	1,732,932	49,156
Lebanon Valley college	Annaville, Pa.	1866	Clyde A. Lynch	399	513	35	911,598	16,302
Lehigh university	Bethlehem, Pa.	1865	Clement C. Williams	1,750	2,091	170	5,000,000	216,000
LeMoyné college	Memphis, Tenn.	1870	Frank Sweeney	399	487	23		
Lenoir-Rhyne college	Hickory, N. C.	1891	P. E. Monroe	453	1,110	21	417,553	13,277
Lewis institute	Chicago, Ill.	1895	D. C. Jackson, Jr.	737	2,656	102	1,500,000	33,000
Limestone college	Gaffney, S. C.	1845	R. C. Granberry	329	406	24	406,309	13,220
Lincoln university	Jefferson City, Mo.	1866	Charles W. Florence	436	579	31		13,000
Lincoln university	Lincoln Univ., Pa.	1854	Walter L. Wright	325	325	22	1,038,000	30,000
Lindenwood college	St. Charles, Mo.	1827	John L. Roemer	439	441	45	1,878,500	18,140
Linfield college	McMinnville, Ore.	1857	Elam J. Anderson	549	549	34	937,000	23,875
Livingstone college	Salisbury, N. C.	1882	William J. Trent	262	390	14		13,471
Louisiana college	Pineville, La.	1906	Claybrook Cottingham	313	426	22	304,469	9,570
Louisiana Polytechnic inst.	Ruston, La.	1894	George W. Bond	1,511	1,961	75		15,724
Louisiana State university	Baton Rouge, La.	1860	James M. Smith	7,044	9,586	450		135,000
Louisville, university of	Louisville, Ky.	1837	Raymond A. Kent	1,682	3,032	299	906,851	30,904
Loyola university	Chicago, Ill.	1870	Sam K. Wilson	4,080	5,076	695	1,536,975	51,802
Loyola university	Los Angeles, Calif.	1865	Hugh M. Duce	585	630	48		
Loyola university	New Orleans, La.	1912	John W. Hynes	977	2,143	133		59,000
Luther college	Decorah, Iowa	1861	Karl Hanson	420	431	38	618,000	44,294
Lynchburg college	Lynchburg, Va.	1903	R. B. Montgomery	247	255	21	295,715	13,500
Macalester college	St. Paul, Minn.	1873	John C. Acheson	630	630	44	1,550,765	22,000
MacMurray college	Jacksonville, Ill.	1846	Clarence P. McClelland	543	655	37	693,940	22,383
Maine, university of	Orono, Me.	1865	Arthur A. Hauck	1,732	2,200	183	919,594	116,000
Manchester college	North Manchester, Ind.	1889	Otho Winger	663	1,131	42	545,479	25,804
Manhattan college	New York, N. Y.	1863	Brother Patrick	1,258	1,286	93		40,500
Marietta college	Marietta, Ohio	1835	Edward S. Parsons	355	368	29	1,309,426	106,000
Marquette university	Milwaukee, Wis.	1864		3,397	3,955	367	2,582,201	38,134
Marshall college	Huntington, W. Va.	1837	James E. Allen	1,460	2,595	91		29,300
Mary Baldwin college	Staunton, Va.	1842	L. Wilson Jarman	321	327	27	502,000	17,000
Mary Hardin-Baylor college	Belton, Texas	1845	John C. Hardy	322	594	50	551,594	23,000
Marygrove college	Detroit, Mich.	1910	George H. Derry	502	1,397	55		24,536
Maryland, university of	College Park, Md.	1867	H. C. Byrd	3,295	4,469	491	1,714,450	52,300
Maryville college	Maryville, Tenn.	1819	Ralph W. Lloyd	797	800	50	1,672,148	38,873
Marywood college	Scranton, Pa.	1915	Mother M. Josepha	445	957	45		23,000
Massachusetts Inst. of Tech.	Cambridge, Mass.	1861	Karl T. Compton	2,966	4,257	508	31,800,000	300,000
Massachusetts State college	Amherst, Mass.	1863	Hugh P. Baker	1,262	1,360	131	150,397	100,625
Mercer university	Macon, Ga.	1833	Spright Dowell	433	691	25	1,087,786	43,000
Meredith college	Raleigh, N. C.	1891	Charles E. Brewer	531	532	45	479,770	18,000



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Miami university	Oxford, Ohio	1809	A. P. Upham	2,748	3,342	185	..	129,500
Michigan college of mining	Houghton, Mich.	1885	Grover C. Dillman	682	682	68	..	40,989
Michigan State college	East Lansing, Mich.	1855	Robert S. Shaw	4,912	5,766	386	..	112,437
Michigan, university of	Ann Arbor, Mich.	1817	Alexander G. Ruthven	10,952	14,438	767	\$6,612,268	900,671
Middlebury college	Middlebury, Vt.	1800	Paul D. Moody	788	1,476	59	4,169,407	65,000
Mills college	Oakland, Calif.	1852	Aurelia H. Reinhardt	648	879	90	1,587,832	65,000
Millsaps college	Jackson, Miss.	1890	D. M. Key	430	501	32	888,453	25,000
Milwaukee-Downer college	Milwaukee, Wis.	1895	Lucia R. Briggs	285	296	47	1,424,428	34,000
Minnesota, university of	Minneapolis, Minn.	1851	Lotus D. Coffman	13,691	20,360	644	12,618,117	757,954
Misericordia college	Dallas, Pa.	1923	Sister Mary Loretta	247	562	39	1,100,000	11,601
Mississippi college	Clinton, Miss.	1826	D. M. Nelson	397	549	22	629,105	13,700
Mississippi State college	State College, Miss.	1878	G. D. Humphrey	2,021	2,525	117	239,789	48,931
Miss. State col. for women	Columbus, Miss.	1884	B. L. Parkinson	975	989	68	..	34,200
Mississippi, university of	University, Miss.	1844	Alfred B. Butts	1,261	1,572	75	..	48,834
Missouri, university of	Columbia, Mo.	1839	Frederick A. Middlebush	5,589	7,618	395	2,059,096	318,344
Missouri Valley college	Marshall, Mo.	1888	George H. Mack	267	308	24	660,000	18,270
Monmouth college	Monmouth, Ill.	1856	Thomas H. McMichael	508	549	35	1,839,732	20,530
Montana school of mines	Butte, Mont.	1893	Francis A. Thomson	359	359	19	800,000	10,000
Montana State college	Bozeman, Mont.	1893	Alfred Atkinson	1,241	1,290	107	..	45,935
Montana State university	Missoula, Mont.	1893	George F. Simmons	1,951	2,606	84	..	24,576
Moravian college	Bethlehem, Pa.	1807	William N. Schwarze	179	181	20	384,928	47,000
Morningside college	Sioux City, Iowa	1894	Earl A. Roadman	531	660	42	442,905	38,770
Mount Holyoke college	South Hadley, Mass.	1837	Roswell G. Ham	1,005	1,049	136	4,899,649	137,000
Mount Mary college	Milwaukee, Wis.	1913	Edward A. Fitzpatrick	369	1,351	52	..	16,000
Mount St. Joseph, col. of	Cincinnati, Ohio	1920	Mother Mary Regina	283	593	41	9,867,300	12,000
Mount St. Mary's college	Emmitsburg, Md.	1808	..	350	415	40	192,000	40,000
Mount St. Mary's college	Los Angeles, Calif.	1925	Mother Margaret Mary	373	757	28	..	10,000
Mount St. Scholastica col.	Atchison, Kan.	1863	Mother Lucy Dooley	243	544	28	..	15,000
Mount St. Vincent, col. of	New York, N. Y.	1910	Sister Josephine Rosaire	476	767	44	175,882	21,582
Mount Union college	Alliance, Ohio	1846	William H. McMaster	542	595	41	1,524,471	43,000
Muhlenberg college	Allentown, Pa.	1867	Robert C. Horn	430	935	32	929,260	51,000
Muskingum college	New Concord, Ohio	1837	Robert N. Montgomery	673	1,014	54	922,200	22,400
Nebraska, university of	Lincoln, Neb.	1860	Edgar A. Burnett	6,587	8,202	321	960,928	285,820
Nebraska Wesleyan univ.	Lincoln, Neb.	1888	Elmer G. Cutshall	424	570	47	1,100,000	27,118
Nevada, university of	Reno, Nev.	1864	Walter E. Clark	1,002	1,218	82	329,159	57,735
New Hampshire, univ. of	Durham, N. H.	1866	Roy D. Hunter	1,762	2,063	169	1,228,934	80,645
New Mexico col. of agr.	State College, N. M.	1889	H. M. Gardner	751	959	70	139,742	32,500
New Mexico, university of	Albuquerque, N. M.	1889	James F. Zimmerman	1,248	2,132	101	669,497	49,928
New Rochelle, college of	New Rochelle, N. Y.	1904	Mother M. Ignatius	716	739	51	..	24,906
New York, col. of the city of	New York, N. Y.	1847	Frederick B. Robinson	8,042	21,915	970	..	172,976
New York university	New York, N. Y.	1831	Harry W. Chase	13,377	43,510	1,916	9,091,865	453,700
Newark col. of engineering	Newark, N. J.	1881	Allen R. Cullimore	765	778	57	..	7,690
Newberry college	Newberry, S. C.	1856	James C. Kinard	294	467	20	..	18,311
Newcomb Memorial college	New Orleans, La.	1886	Pierce Butler	633	650	62	3,090,825	..
Niagara university	Niagara Falls, N. Y.	1856	Joseph M. Noonan	928	1,024	82	..	25,000
North Carolina, agr. col. of	Greensboro, N. C.	1891	Ferdinand D. Bluford	660	1,355	37	..	18,000
North Carolina col. negroes	Durham, N. C.	1923	James E. Shepard	418	1,212	20	..	..
North Carolina State col.	Raleigh, N. C.	1887	Frank P. Graham	2,099	2,232	177	..	36,792
North Carolina, univ. of	Chapel Hill, N. C.	1789	Frank P. Graham	3,240	4,163	276	1,619,510	257,871
North Central college	Naperville, Ill.	1861	Edward E. Rall	522	538	42	873,382	20,000
North Dakota agr. col.	Fargo, N. D.	1889	John H. Shepperd	1,641	1,926	122	..	54,900
North Dakota, univ. of	Grand Forks, N. D.	1883	John C. West	1,645	1,986	140	1,700,000	111,784
Northwestern university	Evanston, Ill.	1851	Walter D. Scott	6,221	20,446	791	21,782,482	510,439
Norwich university	Northfield, Vt.	1819	Porter Adams	294	294	25	646,145	26,000
Notre Dame, university of	Notre Dame, Ind.	1842	John F. O'Hara	3,080	3,925	211	1,010,000	163,622
Oberlin college	Oberlin, Ohio	1833	Ernest H. Wilkins	1,722	1,834	165	17,093,699	360,461
Occidental college	Los Angeles, Calif.	1887	Remsen D. Bird	693	725	66	1,125,000	45,000
Ohio State university	Columbus, Ohio	1870	George W. Rightmire	12,827	16,675	1,280	1,185,216	433,615
Ohio university	Athens, Ohio	1802	Herman G. James	2,730	4,119	213	69,719	97,911
Ohio Wesleyan university	Delaware, Ohio	1842	Edmund D. Soper	1,413	1,413	94	3,700,000	145,083
Oklahoma Agr. and Mech. col.	Stillwater, Okla.	1890	Henry G. Bennett	4,036	5,570	282	..	80,000
Oklahoma college for women	Chickasha, Okla.	1908	M. A. Nash	856	946	53	..	21,213
Oklahoma, university of	Norman, Okla.	1890	William B. Bizzell	5,678	7,237	314	3,544,000	170,000
Oregon State Agr. college	Corvallis, Ore.	1868	George W. Peavy	4,013	4,632	250	222,268	125,358
Oregon, university of	Eugene, Ore.	1872	C. Valentine Boyer	3,913	4,485	219	218,874	240,409
Ottawa university	Ottawa, Kan.	1848	Andrew B. Martin	276	315	23	525,008	16,300
Otterbein college	Westerville, Ohio	1847	Walter G. Clippinger	302	327	33	1,231,924	27,105
Our Lady of the Lake col.	San Antonio, Texas	1896	H. A. Constantineau	204	923	43	182,455	33,275
Pacific, college of the	Stockton, Calif.	1851	Tully C. Knoles	226	561	73	622,527	30,318
Pacific Union college	Angwin, Calif.	1909	Walter I. Smith	204	577	33	..	15,500
Park college	Parkville, Mo.	1875	William L. Young	467	468	44	1,730,000	26,734
Parsons college	Fairfield, Iowa	1875	Clarence W. Greene	233	308	23	602,426	19,650
Pembroke college	Providence, R. I.	1892	Henry M. Wriston	467	468	113	..	9,063
Pennsylvania col. for women	Pittsburgh, Pa.	1860	Herbert L. Spencer	261	270	37	520,774	16,000
Pennsylvania State college	State College, Pa.	1855	Ralph D. Hetzel	5,904	9,012	1,283	517,000	149,849
Pennsylvania, university of	Philadelphia, Pa.	1740	Thomas S. Gates	7,015	15,810	1,428	18,998,279	811,303
Phillips university	Enid, Okla.	1907	I. N. McCash	386	637	31	643,555	22,351
Pittsburgh, university of	Pittsburgh, Pa.	1787	John G. Bowman	6,172	10,993	940	2,176,963	166,406
Pomona college	Claremont, Calif.	1887	Charles K. Edmunds	795	820	76	2,841,463	77,908
Portland, university of	Portland, Ore.	1901	John J. Boyle	514	564	36	50,000	12,000
Princeton university	Princeton, N. J.	1746	Harold W. Dodds	2,647	2,665	382	26,929,810	730,000



Institution	Location	Year Founded	Chief Executive	Full Time Students	Full and Part Time Students	Faculty	Endowment	Library Volumes
Providence college	Providence, R. I.	1917	Lorenzo C. McCarthy	818	1,293	65	\$2,250,000	30,000
Puget Sound, college of	Tacoma, Wash.	1888	Edward H. Todd	565	835	42	1,200,000	4,217
Purdue university	Lafayette, Ind.	1869	Edward C. Elliott	5,907	6,176	409	340,000	120,000
Queens-Chicora college	Charlotte, N. C.	1857	William H. Frazer	414	431	33	302,164	13,119
Radcliffe college	Cambridge, Mass.	1879	Ada L. Comstock	1,002	1,019	400	3,811,287	75,000
Randolph-Macon college	Ashland, Va.	1830	Robert E. Blackwell	300	300	17	1,044,000	27,200
Randolph-Macon woman's col.	Lynchburg, Va.	1893	Theodore H. Jack	670	694	69	1,203,630	41,000
Redlands, university of	Redlands, Calif.	1907	Clarence H. Thurber	561	689	51	3,159,585	43,000
Reed college	Portland, Ore.	1908	Dexter M. Keezer	447	487	45	1,826,282	52,121
Regis college	Denver, Colo.	1888	Robert M. Kelley	372	550	44	..	32,500
Rensselaer Polytech. inst.	Troy, N. Y.	1824	William O. Hotchkiss	1,375	1,387	133	5,090,587	25,864
Rhode Island State college	Kingston, R. I.	1890	Raymond G. Bressler	1,114	1,119	99	..	29,000
Rice institute	Houston, Texas	1912	Edgar O. Lovett	1,339	1,339	79	11,000,000	121,500
Richmond, university of	Richmond, Va.	1832	F. W. Boatwright	1,044	1,443	80	2,851,397	65,000
Ripon college	Ripon, Wis.	1851	Silas Evans	350	354	34	938,899	30,655
Roanoke college	Salem, Va.	1847	Charles J. Smith	358	483	23	649,774	18,294
Rochester, university of	Rochester, N. Y.	1850	Alan Valentine	1,749	3,659	465	54,093,148	264,500
Rockford college	Rockford, Ill.	1847	Gordon K. Chalmers	289	372	28	1,040,000	23,000
Rollins college	Winter Park, Fla.	1885	Hamilton Holt	379	380	70	1,250,000	45,446
Rosary college	River Forest, Ill.	1901	Sister Thomas Aquinas	422	908	52	50,000	30,178
Rose Polytechnic institute	Terre Haute, Ind.	1874	Donald B. Prentice	219	222	25	1,900,000	18,000
Russell Sage college	Troy, N. Y.	1916	J. L. Meader	595	595	60	899,974	13,710
Rutgers university	New Brunswick, N. J.	1766	Robert C. Clothier	2,852	3,756	560	4,271,524	266,700
Sacred Heart, col. of the	New York, N. Y.	1847	Grace C. Dammann	344	365	36	..	22,442
St. Ambrose college	Davenport, Iowa	1882	Martin Cone	417	871	42	725,000	15,000
St. Benedict's college	Atchison, Kan.	1857	Martin Veth	276	295	37	1,731,830	40,000
St. Benedict's college	St. Joseph, Minn.	1913	Sister R. Pratschner	200	407	34	..	19,850
St. Bonaventure college	St. Bonaventure, N. Y.	1859	Thomas Plassman	574	932	54	500,000	29,622
St. Catherine, college of	St. Paul, Minn.	1903	Sister Antonia	581	814	59	3,555,750	49,143
St. Elizabeth, college of	Convent Station, N. J.	1899	Sister Marie J. Byrne	389	759	33	..	19,000
St. John's university	Brooklyn, N. Y.	1870	Edward J. Walsh	5,888	7,216	207	500,000	25,000
St. Joseph's college	Philadelphia, Pa.	1851	Thomas J. Higgins	479	492	33	..	105,000
St. Joseph's col. for women	Brooklyn, N. Y.	1916	Thomas E. Molloy	405	405	43	..	15,017
St. Lawrence university	Canton, N. Y.	1856	Laurens H. Seelye	1,872	2,169	85	2,238,823	61,847
St. Louis university	St. Louis, Mo.	1818	Robert S. Johnston	4,168	6,537	600	1,800,000	157,719
St. Mary's college	St. Mary's, Calif.	1863	Brother Albert	498	498	38	184,804	25,594
St. Olaf college	Northfield, Minn.	1874	L. W. Boe	1,029	1,041	80	929,173	110,000
St. Rose, college of	Albany, N. Y.	1920	Edmund Gibbons	328	542	34	703,500	7,000
St. Thomas, college of	St. Paul, Minn.	1885	James H. Moynihan	597	608	43	294,146	20,244
St. Vincent college	Latrobe, Pa.	1846	Alfred Koch	377	562	32	2,161,200	60,000
Salem college	Winston-Salem, N. C.	1772	Howard E. Rondthaler	318	393	42	442,846	13,500
Santa Clara, university of	Santa Clara, Calif.	1777	James J. Lyons	511	511	48	..	55,150
San Francisco, univ. of	San Francisco, Calif.	1859	Harold E. Ring	762	900	55	..	30,518
Scripps college	Claremont, Calif.	1926	Ernest J. Jaqua	213	213	29	702,574	16,341
Seton Hall college	South Orange, N. J.	1856	James F. Kelley	402	592	48	86,992	14,957
Seton Hill college	Greensburg, Pa.	1916	James A. Reeves	333	578	45	500,000	20,365
Shaw university	Raleigh, N. C.	1865	Robert P. Daniel	418	1,037	27	..	13,978
Shorter college	Rome, Ga.	1873	Paul M. Cousins	212	212	29	351,690	13,363
Simmons college	Boston, Mass.	1899	Bancroft Beatley	1,511	1,730	158	3,419,999	78,788
Simpson college	Indianola, Iowa	1860	Earl E. Harper	480	658	33	952,904	26,100
Sioux Falls college	Sioux Falls, S. D.	1883	C. R. Sattgast	226	452	22	303,264	13,000
Skidmore college	Saratoga Springs, N. Y.	1911	Henry T. Moore	755	759	76	781,315	42,751
Smith college	Northampton, Mass.	1871	William A. Neilson	2,129	2,129	213	6,308,000	250,000
South Carolina, univ. of	Columbia, S. C.	1801	Rion McKissick	1,542	1,949	94	..	130,000
South Dakota State college	Brookings, S. D.	1881	Charles W. Pugsley	1,092	1,193	109	663,977	51,105
South Dakota St. sch. of mines	Rapid City, S. D.	1885	Joseph P. Connelly	366	383	28	..	15,000
South Dakota, university of	Vermillion, S. D.	1862	I. D. Weeks	742	1,059	99	..	86,000
South, university of the	Sewanee, Tenn.	1857	Benjamin F. Finney	234	286	37	1,529,560	46,377
Southern California, univ. of	Los Angeles, Calif.	1879	Rufus B. von KleinSmid	4,707	14,490	568	1,533,837	193,547
Southern Methodist univ.	Dallas, Texas	1910	Charles C. Seelman	1,796	3,280	140	2,289,700	85,000
Southwestern college	Memphis, Tenn.	1875	Charles E. Diehl	506	604	32	441,069	34,000
Southwestern college	Winfield, Kan.	1885	Frank E. Mossman	500	608	40	543,915	21,212
Southwestern Louisiana inst.	Lafayette, La.	1898	Edwin L. Stephens	1,378	1,968	70	..	20,000
Southwestern university	Georgetown, Texas	1872	John W. Bergin	403	508	32	400,532	37,016
Spelman college	Atlanta, Ga.	1881	Florence M. Read	336	350	38	2,908,280	45,076
Spring Hill college	Spring Hill, Ala.	1830	John J. Druhan	269	560	27	782,767	30,000
Stanford university	Stanford Univ., Calif.	1885	Ray L. Wilbur	4,130	4,690	480	32,005,239	609,735
Stevens Inst. of Technology	Hoboken, N. J.	1870	Harvey N. Davis	567	567	64	2,995,000	25,000
Susquehanna university	Selinsgrove, Pa.	1858	G. Morris Smith	307	365	32	351,705	12,660
Swarthmore college	Swarthmore, Pa.	1864	Frank Aydelotte	690	690	93	7,461,542	98,000
Sweet Briar college	Sweet Briar, Va.	1901	Meta Glass	453	453	52	371,712	36,709
Syracuse university	Syracuse, N. Y.	1870	Charles W. Flint	6,077	8,083	612	3,578,337	255,030
Talladega college	Talladega, Ala.	1867	Buell G. Gallagher	286	286	29	950,000	36,420
Tarkio college	Tarkio, Mo.	1883	M. Earle Collins	203	248	19	640,105	15,220
Temple university	Philadelphia, Pa.	1884	Charles E. Beury	5,464	9,252	716	..	64,243
Tennessee, university of	Knoxville, Tenn.	1794	James D. Hoskins	3,188	4,903	227	400,000	153,364
Texas, Agr. and Mech. col. of	College Station, Texas	1871	Thomas O. Walton	4,842	5,644	318	209,000	50,000
Texas Christian university	Fort Worth, Texas	1873	Edward M. Waits	1,000	1,785	60	4,540,407	39,103
Texas col. of arts and ind.	Kingsville, Texas	1917	J. O. Loftin	810	940	54	..	15,800
Texas State col. for women	Denton, Texas	1901	Louis H. Hubbard	2,463	3,672	145	..	54,000
Texas Technological college	Lubbock, Texas	1925	Bradford Knapp	2,942	4,258	154	..	45,225



Institution	Location	Year Founded	Chief Executive	Full Time Students	Full and Part Time Students	Faculty	Endowment	Library Volumes
Texas, university of	Austin, Texas	1881	John W. Calhoun	9,074	15,513	531	\$23,168,960	482,077
Thiel college	Greenville, Pa.	1866	Earl S. Rudisill	269	310	23	161,508	17,000
Tillotson college	Austin, Texas	1877	Mary E. Branch	348	614	21	..	9,000
Toledo, university of	Toledo, Ohio	1872	Philip C. Nash	1,506	2,786	127	..	35,864
Transylvania college	Lexington, Ky.	1780	Arthur Braden	495	645	34	701,634	38,334
Trinity college	Hartford, Conn.	1823	Remsen B. Ogilby	494	634	49	2,950,000	125,000
Trinity college	Washington, D. C.	1897	Sister Berchmans Julia	376	376	55	484,828	40,000
Trinity university	Waxahachie, Texas	1869	Raymond H. Leach	304	375	31	733,753	12,992
Tufts college	Medford, Mass.	1852	John A. Cousens	2,104	2,104	585	7,291,900	110,000
Tulane university	New Orleans, La.	1835	Douglas Anderson	2,676	4,568	457	10,265,258	182,541
Tulsa, university of	Tulsa, Okla.	1894	C. I. Pontius	835	1,604	79	1,062,348	29,588
Tusculum college	Greeneville, Tenn.	1794	Charles A. Anderson	263	264	20	718,234	13,800
Tuskegee Norm. & Ind. inst.	Tuskegee Inst., Ala.	1881	Frederick D. Patterson	1,160	1,749	115	7,027,155	42,000
Union college	Barbourville, Ky.	1879	John O. Gross	278	532	19	450,000	11,000
Union college	Schenectady, N. Y.	1795	Dixon R. Fox	770	850	79	4,113,000	88,733
U. S. Military academy	West Point, N. Y.	1802	William D. Connor	1,782	1,782	226	..	100,000
U. S. Naval academy	Annapolis, Md.	1845	David F. Seilers	2,231	2,231	286	..	18,000
Upsala college	East Orange, N. J.	1893	Frans Ericsson	360	432	28	..	11,862
Ursinus college	Collegeville, Pa.	1860	Norman E. McClure	525	525	43	563,395	27,150
Utah State Agr. college	Logan, Utah	1888	Elmer G. Peterson	2,581	2,654	135	..	59,250
Utah, university of	Salt Lake City, Utah	1850	George Thomas	3,681	3,999	194	..	118,642
Valparaiso university	Valparaiso, Ind.	1873	O. C. Kreinheder	497	581	41	509,166	22,185
Vanderbilt university	Nashville, Tenn.	1872	James H. Kirkland	1,607	1,607	389	10,000,000	214,354
Vassar college	Poughkeepsie, N. Y.	1861	Henry N. MacCracken	1,217	1,300	170	8,800,000	192,667
Vermont, university of	Burlington, Vt.	1791	Guy W. Bailey	1,329	2,208	214	3,053,151	140,550
Villanova, college of	Villanova, Pa.	1842	Edward V. Stanford	904	2,903	151	134,000	23,000
Virginia Military institute	Lexington, Va.	1839	John A. Lejeune	705	705	54	..	42,756
Virginia Polytechnic inst.	Blacksburg, Va.	1872	Julian A. Burruss	2,293	2,342	178	..	60,734
Virginia St. col. for Negroes	Ettrick, Va.	1882	John M. Gandy	921	1,426	71	..	18,949
Virginia Union university	Richmond, Va.	1865	William J. Clark	548	970	34	700,000	24,562
Virginia, university of	Charlottesville, Va.	1819	John L. Newcomb	2,574	2,681	200	11,000,000	290,000
Wabash college	Crawfordsville, Ind.	1832	Louis B. Hopkins	373	373	29	2,129,960	80,000
Wagner Memorial Lutheran col.	Staten Island, N. Y.	1883	Clarence C. Stoughton	205	230	20	..	12,500
Wake Forest College	Wake Forest, N. C.	1834	Thurman D. Kitchin	952	1,435	51	2,394,000	49,517
Walla Walla college	Walla Walla, Wash.	1892	William M. Landeen	225	621	27	..	17,700
Washburn college	Topeka, Kan.	1865	Philip C. King	707	869	76	1,251,439	32,000
Washington and Jefferson col.	Washington, Pa.	1780	Ralph C. Hutchison	512	559	36	1,507,957	52,350
Washington and Lee univ.	Lexington, Va.	1749	Francis P. Gaines	925	925	59	1,536,138	71,528
Washington college	Chestertown, Md.	1782	Gilbert W. Mead	297	297	25	..	14,000
Washington, State college of	Pullman, Wash.	1890	Ernest O. Holland	3,807	4,422	231	3,395,636	280,000
Washington university	St. Louis, Mo.	1853	George R. Throop	3,092	3,924	446	20,323,123	295,249
Washington, university of	Seattle, Wash.	1861	Lee P. Sieg	9,632	13,785	745	4,994,215	288,782
Wayne university	Detroit, Mich.	1933	Frank Cody	4,548	11,718	711	..	60,000
Wellesley college	Wellesley, Mass.	1870	Mildred H. McAfee	1,489	1,503	180	8,440,402	160,955
Wells college	Aurora, N. Y.	1868	William E. Weld	313	313	41	1,515,580	75,830
Wesleyan college	Macon, Ga.	1836	Dice R. Anderson	286	292	31	381,050	21,180
Wesleyan university	Middletown, Conn.	1831	James L. McConaughy	705	705	76	7,100,071	193,561
West Virginia State college	Institute, W. Va.	1891	John W. Davis	733	966	51	..	17,000
West Virginia university	Morgantown, W. Va.	1867	Chauncey S. Boucher	2,527	2,668	232	..	182,500
Western college for women	Oxford, Ohio	1853	Ralph K. Hickok	335	335	40	908,593	36,818
Western Maryland college	Westminster, Md.	1868	Fred G. Holloway	560	867	46	883,695	26,950
Western Reserve university	Cleveland, Ohio	1826	Winfred G. Leutner	3,224	10,134	714	11,963,092	447,800
Westminster college	Fulton, Mo.	1853	Franc L. McCluer	303	306	19	925,000	20,975
Westminster college	New Wilmington, Pa.	1852	Robert F. Galbreath	488	502	43	900,000	15,000
Wheaton college	Norton, Mass.	1834	J. Edgar Park	473	473	64	1,088,854	34,029
Wheaton college	Wheaton, Ill.	1853	James O. Buswell, Jr.	1,022	1,261	83	725,000	27,560
Whitman college	Walla Walla, Wash.	1859	W. A. Bratton	542	547	46	1,086,191	59,603
Whittier college	Whittier, Calif.	1898	W. O. Mendenhall	529	664	53	..	27,592
Wichita, Municipal univ. of	Wichita, Kan.	1926	William M. Jardine	1,295	1,604	76	91,382	43,983
Wiley college	Marshall, Texas	1873	Matthew W. Dogan	475	743	24	300,757	12,835
Willamette university	Salem, Ore.	1842	Bruce R. Baxter	745	787	57	1,700,000	41,200
William and Mary, col. of	Williamsburg, Va.	1693	John S. Bryan	1,255	1,767	90	850,000	89,000
William Jewell college	Liberty, Mo.	1849	John F. Herget	390	448	25	1,300,000	40,000
Williams college	Williamstown, Mass.	1793	James P. Baxter, 3rd	829	829	81	7,519,762	158,404
Wilson college	Chambersburg, Pa.	1860	Paul S. Havens	411	411	46	788,644	35,000
Winthrop college	Rock Hill, S. C.	1886	Shelton Phelps	1,459	1,737	75	..	52,500
Wisconsin, university of	Madison, Wis.	1848	Clarence A. Dykstra	10,800	14,415	568	1,383,111	470,000
Wittenberg college	Springfield, Ohio	1845	Rees E. Tulloss	822	1,206	78	2,024,000	55,710
Wofford college	Spartanburg, S. C.	1854	Henry N. Snyder	490	600	27	635,066	31,176
Wooster, college of	Wooster, Ohio	1866	Charles F. Wishart	998	1,028	71	3,214,457	72,000
Worcester Polytechnic inst.	Worcester, Mass.	1865	Ralph Earle	637	659	68	3,400,000	24,000
Wyoming, university of	Laramie, Wyo.	1887	Arthur G. Crane	1,840	2,825	139	2,583,097	81,836
Xavier university	Cincinnati, Ohio	1831	Dennis F. Burns	485	1,247	57	..	47,000
Yale university	New Haven, Conn.	1701	Charles Seymour	5,221	5,221	769	105,000,000	2,325,000
Yankton college	Yankton, S. D.	1881	G. W. Nash	289	323	30	812,000	21,000

NOTE: Enrolment and faculty statistics are for the 1937-38 term and are based on figures compiled by President Raymond Walters of the University of Cincinnati in *School and Society*, Dec. 18, 1937. Endowment and library statistics are for the latest date with generally comparable figures (1935-36).



**Great Britain.**—The year 1937 witnessed steady developments in the majority of university institutions in Great Britain and Ireland. A brief conspectus of the progress achieved in the Universities of the Joint Constituency, *i.e.* all those in England excluding Oxford, Cambridge, and London affords the best illustration of the active policy which is being pursued by one and all.

At Birmingham, building on the new university site at Edgbaston continued, and it is expected that the new hospitals centre and medical school will be opened in 1938. Work is also proceeding on the Barber Institute of Fine Art. A special course leading to the degree of B.Sc. in coal utilization was instituted, its object being to train young men of sound general education in the processes connected with the treatment of coal, its use, and the economic factors involved in marketing the finished product.

At Bristol, plans for the new dental school were approved, a large number of junior teaching appointments were created, a certificate in applied bacteriology was instituted, and a social survey was made. The University of Durham was reorganized under its new statutes in two divisions—Durham and Newcastle—under separate administrative heads. In Leeds, plans for additions to the central block of the university and for the Union buildings were approved, a new boathouse was erected, and headquarters were assigned for the O.T.C. At Liverpool, the Cohen library and the Harding gymnasium were in course of erection, and a board of Clinical Studies was substituted for the Clinical school. At Manchester, the new library was opened and the appointments board reorganized. In Reading proposals were under consideration for a new hall of residence for women. At Sheffield, work was in progress on new buildings for the department of glass technology and on a number of other extensions.

**Canada.**—In Alberta, field crop problems are being investigated; in the University of British Columbia, a department of university extension has been organized and work in forestry has been extended; at Dalhousie, a physical instructor has been appointed; in McGill, a residence for men has been provided; in Manitoba, the departments in agriculture have been reorganized and a number of new appointments made; in Toronto, preventive medicine is becoming more and more a major subject in the medical curriculum, new courses have been provided leading to B.Sc. in mining geology and for sanitary engineers, and graduates in forestry are in increasing demand.

**Australia.**—In Australia, as elsewhere, interest in student life was displayed, by the University of Adelaide, for example, in the erection of the George Murray building for the men's union and the bridging of the Torrens to connect the sports oval with the university grounds, and by the University of Melbourne in the provision of a students' union containing all facilities for staff and students at a cost of £67,000.

**South Africa.**—The Carnegie Corporation of New York made a grant of \$45,000 to the University of Capetown for research under the auspices of the university into the marine ecology of the South African coast and the growth and storage of deciduous fruit, as well as for making a linguistic, ethnographical, and demographic survey of the Langa native location and a social survey of Capetown. Among the new posts created at Capetown is a lectureship in the Bantu languages.

**India.**—In India many of the universities, as in other countries, partly because of the growth of unemployment and partly through the realization of the necessity for action on their part, began to show an increased interest in students' welfare. In Calcutta, an Appointments and Information Bureau was established. In Madras, proposals for a similar institution were under consideration. In Mysore a post of superintendent of physical education was sanctioned. In Osmania university, hostels for 400 students have been provided.

**China.**—In China, one of the most interesting developments was the proposal of the University of Yenching to reorganize its teaching arrangements on the lines of the Oxford "Modern Greats." Advisers with a knowledge of the Oxford system were appointed with a view to examining how far this scheme could be realized.

**Japan.**—In Japan, with its five Imperial universities on the mainland, one in Korea, and one on Formosa, there have been no special developments except at Tohoku university, Sendai, where an Institute of Agriculture and Fisheries has been established with the main purpose of studying the north-eastern agricultural and fishery problem. Experiments are being made into the possibility of substituting barley and wheat for the paddy crops and also of increasing the supplies of fish around this area. During recent years various Japanese professors have visited Great Britain and have delivered lectures at universities and elsewhere.

**Palestine.**—At the Hebrew university of Jerusalem, a "medical centre" is being erected in the vicinity of the university, to consist of a medical school, university hospital, and a nurses' school.

**Denmark.**—The University of Copenhagen completed its first year under its new constitution of 1936. The library is preparing to move to a new academic quarter on the outskirts of the city. Aarhus university has inaugurated a new institute for biochemistry and physiology.

**France.**—French universities have little to record in the way of outstanding developments. The number of students has declined by over 8,000 since 1934–35. A "Service Central de la Recherche Scientifique" has been established to co-ordinate research work. The retiring age of professors has been lowered to 65 years.

**Germany.**—On June 27 the University of Gottingen celebrated the 200th anniversary of its foundation. Invitations to attend the celebrations had been declined by the universities of Oxford, Cambridge, Yale, Princeton, Amsterdam, Leyden, Utrecht, and Groningen, and had been accepted with reservations amounting to a refusal by Harvard.

**Greece.**—In Greece, there were only minor developments; but a closer rapprochement with British culture was provided for by the creation under the aegis of the British Council of the Byron Chair of English Literature and Institutions at the University of Athens.

**Norway.**—At the University of Oslo, funds were provided for a new institute of bacteriology.

**Poland.**—In Poland, where there are now 16 institutions of higher education, with 40,000 students, the most important development was the Act of July 2, 1937, whereby chairs can no longer be abolished by the minister of Public Instruction without the consent of the board of the faculty.

**Portugal.**—The University of Coimbra celebrated the 400th anniversary of its final establishment. A centre of Brazilian studies was inaugurated. The faculty of engineering of the University of Oporto was installed in a new and fully-equipped building, and its former premises were absorbed by the faculty of science. In the University of Lisbon, the faculty of medicine added new laboratories and the new Higher Technical Institute building was equipped at a cost of £250,000. A national station of agronomy was established.

**Russia.**—In Russia, one of the most important features was the fixing of the salaries of the teaching and the administrative staffs of universities and of the grants made to all students.

**University Professors, American Association of:** *see* ACADEMIC FREEDOM.

**Upper Silesia:** *see* SILESIA, UPPER.



**Uriu, Sotokichi,** BARON (1857-1937), Japanese admiral who graduated from the U.S. Naval Academy in 1881, took an active part in both the Chinese-Japanese War of 1894 and the Russo-Japanese War of 1904-05. Born at Daishoji in 1857, he was known for many years as a champion of Japanese-American friendship. His death occurred at his Odawara home, Nov. 11, 1937.

**Uruguay,** a republic on the Atlantic coast of South America; language, Spanish; capital, Montevideo; president, Gabriel Terra. The area is 72,153 square miles. Population (1933) 1,993,234; (estimated, 1935) 2,035,440. There is a large Italian admixture, and a greater percentage of whites than in any American country except Canada and Argentina. The chief cities are Montevideo (658,284) and Paysandú (40,000).

**History.**—Uruguay is governed by an elected president and congress. The year 1937 was uneventful, and was marked chiefly by efforts of the Government to reach an agreement with holders of defaulted bonds and to improve external trade relations. In July an important debt adjustment agreement with the Foreign Bondholders' Protective Council was approved by congress. Under its terms, interest rates on four issues of external bonds aggregating \$52,947,500 were scaled down, from an original 5% to 8%, to 3½% to 4½%, with interest and amortization to be resumed in 1938. Later in the year, announcement was made that the Government planned to offer holders of defaulted City of Montevideo bonds an exchange of national bonds, at a lower rate of interest. In May, the minister of finance visited the United States in an effort to effect a trade agreement and liberalization of tariffs, especially on frozen meat. No immediate result developed.

**Trade and Communication.**—Uruguay is directly connected by railway with Brazil and Argentina, by air with all parts of America, and by water with other parts of South America, the United States, and Europe. There are 1,650mi. of railways, and over 3,000mi. of national and 5,000mi. of local highways. In 1936 imports were 65,935,000 pesos (Great Britain, 18%; United States, 13.4%), with mineral oils, sugar, and coal leading. Exports were 90,300,000 pesos, comprising principally wool, meat and meat products and wheat, with Great Britain (25.8%), the United States (15.5%), and Germany (11.2%) the leading customers.

**Agriculture.**—Uruguay is primarily pastoral and agricultural. In 1930 there were 7,127,912 cattle and 20,558,124 sheep. Live-stock and products account for 96% of the exports, largely wool. Agricultural production, chiefly wheat, corn, and linseed, is valued at 10,000,000 pesos annually. Canning of meat for export is an important industry. Uruguay has 400,000 hectares (1 hectare equals 2.47 acres) of natural forests and 380,000 hectares of reforested areas.

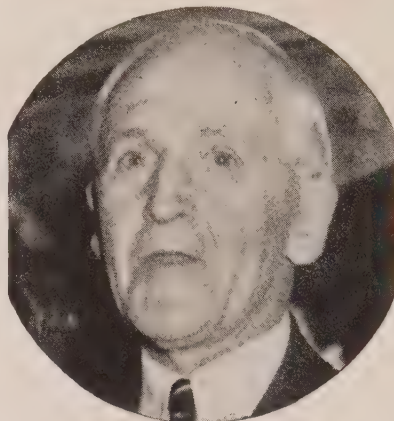
**Finance.**—The monetary unit is the peso (value: 55¢ in the U.S.). Government receipts in 1936 were 90,921,991.69 pesos; expenditures were 86,215,019.47.

**Education.**—Education is compulsory and free. In 1935 there were 1,563 elementary and secondary schools, with an enrolment of 196,346. The National university at Montevideo has a high standing. (See also WATER POWER.) (L. W. BE.)

**U.S.S.R.:** see UNION OF SOVIET SOCIALIST REPUBLICS.

**Utah,** a Rocky Mountain State, admitted to the United States in 1896, is popularly known as the "Mormon State"; area, 84,990 sq.mi.; population in 1930, 507,847; in 1937, 520,000 (estimated). In 1930 there were 495,955 native whites, 1,108 negroes, and 10,784 persons of other races, including 4,012

Mexicans, 3,269 Japanese, and 158 Filipinos. Salt Lake City, the capital, had a population of 140,267 in 1930 and 149,000 (estimated) in 1938. Other cities: Ogden, railway centre (1930), 40,272; Provo, seat of Brigham Young university (1930), 14,766; Logan, 10,061.



HENRY H. BLOOD, governor of Utah

at 40% and that of the rural districts at 60%. In recent years the Mormon social security program has attracted national interest.

The twenty-first legislature which met in 1937 was characterized by its progressive character. The progressives, led by Dr. Herbert Maw, president of the senate, enacted their program, but the conservative minority, led by Governor Henry H. Blood, controlled patronage. Notable measures enacted were a direct primary law which provides for run-off primaries and an increase in the number of districts in counties having more than one representative in the legislature; a social security act passed in conformity with Federal legislation; a "little Wagner act," which provides for recognition by employers of employee-established bargaining agencies and sets up agencies with power to subpoena witnesses and hear disputes; and a fair-trade practices act to curb monopoly and prevent discrimination against buyers. Governor Blood vetoed a measure exempting from taxation homesteads up to \$2,000 and personal property up to \$300 on the ground that the exemptions would jeopardize the operation of the social welfare laws. The legislature was criticized in the Salt Lake City press because it enacted a budget of \$7,651,328, the largest in the State's history and more than \$1,300,000 above the Governor's figure, which was based on a revenue expectancy of little more than \$6,000,000. The bonded indebtedness of Utah as of June 30, 1937, was \$8,205,000 against which there is a sinking fund of \$4,968,715. E. E. Monson was secretary of State; John W. Guy, auditor; Reese M. Reese, treasurer; Joseph Chez, attorney-general; and Charles H. Skidmore, superintendent of public instruction.

**Education.**—The University of Utah, Salt Lake City, has an enrolment of 3,999, the Utah State agricultural college, Logan, 2,654, and Brigham Young university 2,400. A new junior college is being established at Price.

**Agriculture, Manufacturing, Mining.**—Mining and agriculture are the State's chief industries. Utah had 543 manufacturing establishments in 1935 with an output valued at \$115,923,000. Mineral production for the same year totalled \$41,881,265 with copper, silver, gold, coal and lead all worth over \$5,000,000. The gross income from agriculture and live stock in 1935 was \$40,265,000 with wheat and sugar-beets, the leading crops, valued at \$3,536,830 and \$2,570,480 respectively.

Salt Lake City is an important airway centre and the hub of highways which lead to scenic points of the West including the State's famed Bryce canyon and Zion park. (F. W. GA.)

**Utilities:** see PUBLIC UTILITIES.



**Uzbek S.S.R.** An important Central Asiatic Soviet Republic, a member of the U.S.S.R. (q.v.), bordering on Afghanistan, the republics of Turkmenistan, Kazakhstan, Tajik S.S.R., and Kirghiz S.S.R. and in the north on the Aral sea. Capital, Tashkent; national flag, red ground with the name of the republic in gold in the top left corner in Uzbek and Russian. Leading cities: Tashkent (1936) 515,000 inhabitants, and Samarkand (1936) 130,000 inhabitants.

Area: 370,000 sq.km. (mountain landscape, with great oases especially in the Fergana valley). Population (1933), 5,418,000 (rural 4,117,000, urban 1,301,000). The total number of school pupils (1936-37) was 791,000. On Feb. 14, 1937, a new constitution was adopted in Tashkent by the Sixth Extraordinary Uzbek Soviet Congress. In the summer of 1937 in Uzbekistan as in other Union republics, many of the highest State and party officials (including the premier Khodzhaev and several commissars) were dismissed as alleged Trotskyist and Fascist agents and imprisoned for anti-Government activities.

Sown area (1936), was 102,907 sq.mi. Chief products: cotton (first place in U.S.S.R.), rice, fruit, grapes. Stockfarming of sheep, and the valuable Astrakhan lamb is carried on. Natural resources include copper, sulphur, and oil. Technically and economically the most advanced of the Central Asiatic Soviet Republics, the Uzbek S.S.R., produces four-fifths of the total central Asiatic industry. Retail trade turnover: (1936) 3.4 milliard roubles. Chief export articles: cotton, silk, wool, hides (Persian lamb). Imports: grain. Output of industry (1936, at prices 1926-27): 1,175 million roubles. Output of electricity (1936): 230,000,000 kilowatt-hours. Industries: cotton, wool, silk, leather, oil, machine building. Length of railways (1936): 1,877km. (two-thirds of the total railways of Soviet Middle Asia). Freight carried (1936): 10,659,000 tons. (S. YAK.)

**Vaccination:** see MEDICINE: *Vaccination*; SERUM THERAPY.

**Vaccines and Vaccine Therapy:** see SERUM THERAPY.

**Vanadium.** Required as a constituent in certain types of high grade alloy steels and cast irons, vanadium is produced in considerable quantities. The chief producers are Peru, South-west Africa, Northern Rhodesia and the United States, with small amounts from Norway and Venezuela. In addition to the metallurgical uses, there is also a growing demand for vanadium catalysts in the production of sulphuric acid and certain organic compounds, as well as in the ceramic and dyeing industries. (See also RADIUM.) (G. A. Ro.)

**Vanderlip, Frank Arthur** (1864-1937), American banker, was known chiefly as assistant secretary of the treasury from 1897-1901 and as president of the National City Bank of New York from 1909-19. Born on Nov. 17, 1864, upon an Aurora, Ill., farm, he first worked as a machinist and as a reporter for the local newspaper. He entered the financial field through the sponsorship of Joseph French Johnson, whom he succeeded in 1889 as financial editor of *The Chicago Tribune*. In this post and as editor of *The Economist*, a Chicago weekly publication, he achieved such influence that he was summoned to calm the excitement following a crisis closing the Chicago Exchange. Secretary of the Treasury Lyman Gage recognized his worth by employing him as private secretary in 1897 and securing his promotion to assistant secretary within three months. In this post, he gained national prominence by successfully floating a \$200,000,000 Spanish war loan. As a result, he was summoned to the National City Bank in 1901. As a vice-president of that institution, he specialized in international finance and became its president in 1909. During his

ten years of service, deposits increased rapidly and the bank's interests abroad were rapidly extended. Following his resignation in 1919, much of his time was occupied with investigating graft through the Citizens Federal Research Bureau, which he organized in Washington. He dropped this work in 1924 and resumed his financial activities as special partner of a stock exchange firm during the following year. He died in New York city, June 29, 1937.

**Van Zeeland, Paul** (1893- ), Belgian statesman and economist, born at Soignies, was educated at Louvain and Princeton (U.S.) universities. He entered the Belgian National bank in 1922, and became its secretary in 1924 and a director in 1926. As professor in the Faculty of Law at Louvain (1928), he founded the Louvain Institute of Economic Sciences. Between 1922 and 1933 he represented his Government at various international conferences, including Stresa (1932). In 1931 he visited Russia, and wrote *Reflections on the Five-Year Plan*. In 1934 he was minister without portfolio in the De Broqueville cabinet, and on March 25, 1935, became prime minister of a Coalition Government, holding also the portfolios of foreign affairs and foreign commerce. This Government resigning in May 1936, he formed a new one on June 14, and immediately thereafter presided at the Assembly of the League of Nations. Severely attacked in Parliament in 1937, he won in April a decisive victory in a by-election at Brussels against M. Degrelle, the Rexist leader and in September, after a spirited defence, received a vote of confidence in Parliament. Attacks on him, on the ground that while premier he had received money from the National bank, continued, and he resigned office on October 25. In April 1937 he undertook, at the request of Britain and France, an international economic mission to explore the possibility of overcoming obstacles to international trade, and visited the United States in June, to confer with President Roosevelt.

**Vaporin:** see PRINTING.

**Vargas, Getulio:** see BRAZIL: *History*.

**Varnishes:** see PAINTS AND VARNISHES.

**Vassar College** continued in the year 1937, the seventy-third of its existence, to offer to women a liberal arts education on the university level. The curriculum maintains the principles of distribution and concentration but leaves the choice of particular subjects and of special fields to individual election. It calls for concentration for three and one-half years of the academic studies in a major field leading to a comprehensive examination. For the first time, these comprehensive examinations were taken during 1937 by all members of the senior class. In instruction, there has been an increasing trend toward smaller classes, individual conferences, and independent study.

In the academic year 1937-38 various departments co-operated in a program for the study of housing, comprising a talk by Mrs. Franklin D. Roosevelt on the rôle of women in a housing program, a two-day conference organized by the student political association and led by outstanding authorities in the field of housing, and a series of seminars and lectures by housing experts. With this background, 25 students carried on individual housing studies in their major fields.

A Vassar College Social Museum was established to further research in regard to Dutchess county (within which Vassar is situated), past and present, to train students in presenting local source material by the methods of visual representation, and to collect and render available Dutchess county data.



The reconstruction of Ely Hall in 1937 provided a faculty aula and new quarters for the geology department, including a museum with modern equipment. Taylor Hall and the Thompson library have been joined by the Van Ingen library comprising a three-tier stack with 100 reading stalls and studies, an art library, and additional rooms for the department of art.

(H. N. MACC.)

**Vatican,** the papal palace of the Vatican at Rome, with its museum and gardens, St. Peter's, and the area immediately adjacent (including the Piazza di San Pietro), with 13 scattered buildings in other parts of Rome which enjoy extra-territorial rights, forming (since 1929), a sovereign State, completely surrounded by Italian territory, under the temporal rule of the pope, who appoints a civil governor with full executive powers. Ruler, Pope Pius XI (elected 1922). National flag, the papal standard of white and yellow, charged with St. Peter's Keys and the triple papal tiara.

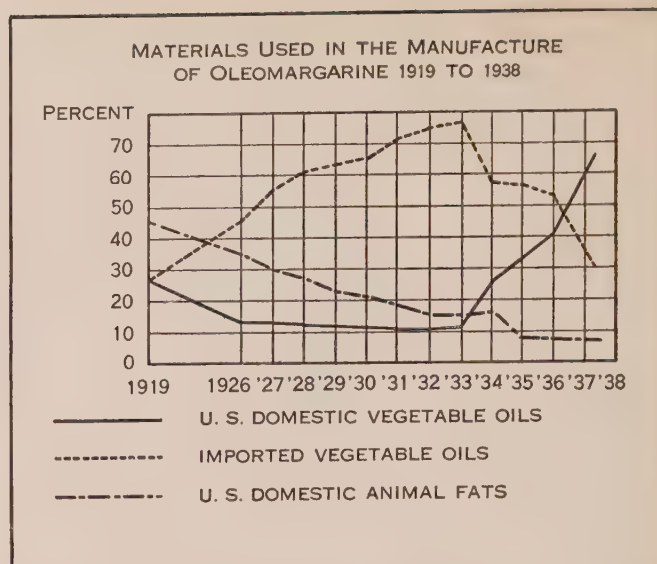
**Area and Population.**—Area: 108½ acres; population (census 1932), 1,025. All the inhabitants are Italian-speaking Roman Catholics, mostly of Italian or Swiss origin. The circumstances of the State make governmental provision for elementary education unnecessary. New buildings for the Papal university were inaugurated in Nov. 1937.

**History.**—The Concordat agreed upon between the Holy See and Yugoslavia, passed after heated debate by the Yugoslav lower house (skuptshina) in July, was abandoned in October before its submission to the senate. Diplomatic relations with Ecuador were resumed and a papal nuncio sent after a breach lasting 50 years; and in August, General Franco's government in Spain was officially recognized, representatives being exchanged. A Pontifical Academy of Sciences, including several British members, was inaugurated on May 31. In August, Fr. Alfonso Camillo de Romanis, O.S.A., was appointed to succeed Fr. Zampini, who had died in June, as papal vicar-general of the Vatican City. The small model prison built in 1936 received its first inmate during the year—a prisoner charged with insulting a gendarme.

**Communications, Currency, etc.**—There is a railway station connected by a short line (about 200yds.) with the Italian railway system; a radio station, from which the pope occasionally broadcasts; and a State postal service, which issues its own stamps. Italian money circulates, but the Vatican State also mints its own coins, corresponding with Italian coins in weight and fineness, though bound by agreement not to mint more than 1,000,000 lire's worth of non-gold coins in any one year. An agreement was made in 1937 by which the Vatican would issue coinage to the value of 800,000 lire, including silver 10- and 5-lire pieces, nickel 2- and 1-lire and 50- and 20-centesimi pieces, and copper coins of 10 and 5 centesimi.

**Defence Forces.**—The only "defence forces" are the papal bodyguard, the "Swiss Guards," numbering about 100, and the papal gendarmeries of about 70. The Piazza di San Pietro is, by treaty, subject to the powers of the Italian police.

**Vegetable Oils and Animal Fats.** The wide development in new uses of vegetable oils and animal fats by modern industry and science is shown graphically by data from the United States Department of Agriculture and has timely, practical interest because of the record cotton and cottonseed crop, the large production of corn, soybean, peanut and other crops in 1937, all of which are important world sources of food and industrial oils. Twenty-five years ago consumption of vegetable oils and animal fats in the United States was about 5,000,000,000lbs. annually. Through



discoveries and improvements in industrial processes a record of 9,000,000,000lbs., or about 74lbs. per capita, was reached in 1929, and it is now considered that consumption will again reach this figure in 1938 and may possibly exceed it.

Butter, lard, and cottonseed oil have generally composed 55 to 65% of the vegetable oils and animal fats used. Drought years and agricultural adjustments that have affected lard and cottonseed oil production have resulted in wider use of other oils and fats, including soybean, corn, peanut, coconut, palm, teaseed, hemp, perilla, linseed, tung, sunflower, rape and sesame oils, and whale and other marine oils, oleo and oleo-stearine. About 70% of these oils and fats, the Department of Agriculture asserts, is used in foods. Approximately 18% goes into the manufacture of soap, and about 8% is for drying uses in paint, varnish, ink, linoleum, and oilcloth. All these oils are sharply competitive one with the other, since many of them can be used interchangeably and supply and price govern the choice, whether a manufacturer uses whale oil from the Antarctic, babassu oil from Brazil, rape from India, cottonseed oil from the South in the United States, sunflower oil from Russia, corn oil from Missouri, or soybean oil from Illinois, lard from Iowa, peanut oil from Virginia, palm oil from Africa or coconut oil from the Philippines. So sharply competitive are many vegetable oils that until recently, when a ready method of identification was developed, teaseed oil was increasingly used as a substitute for olive oil. While many oils can be used interchangeably in processed foods, three, castor bean, croton, and tung oil, cannot be so used because of their aperient qualities. The chart reproduced above, from the U.S. Department of Agriculture's publication *The Agricultural Situation*, shows how different fats were used interchangeably in the manufacture of a very familiar product in the United States, oleomargarine, and how world-wide production competes as the supply of different fats and oils is abundant or scarce and prices, accordingly, are advantageous or unfavourable. (See also Cotton: Cottonseed.) (S. O. R.)

**Venereal Diseases.** Syphilis and gonorrhoea emerged from the shadows of mere scientific nomenclature in 1936. In 1937 they were definitely adopted into the vernacular vocabulary. In Dec. 1936 a Conference on Venereal Disease Control was held in Washington, attended by leading health officers and physicians from all parts of the country; President Roosevelt's greeting to that Conference used the words "venereal diseases" for the first time in any presidential paper. Governor Herbert H. Lehman of New York a few weeks



later endorsed "the battle against syphilis" in vigorous terms, his comments constitute a first known use of the term in gubernatorial papers.

Sampling polls conducted throughout the United States by the American Institute of Public Opinion showed wide public support for venereal disease control; majorities ranging from 79 to 92% supported a vigorous educational campaign, free public clinics, blood tests as pre-requisite to marriage licences, a Congressional appropriation of \$25,000,000 for venereal disease control, free blood tests. In a city-wide poll taken in August, Chicago's health officer, Doctor Herman N. Bundesen, found that 93% of those who voted were willing to take free and confidential blood tests.

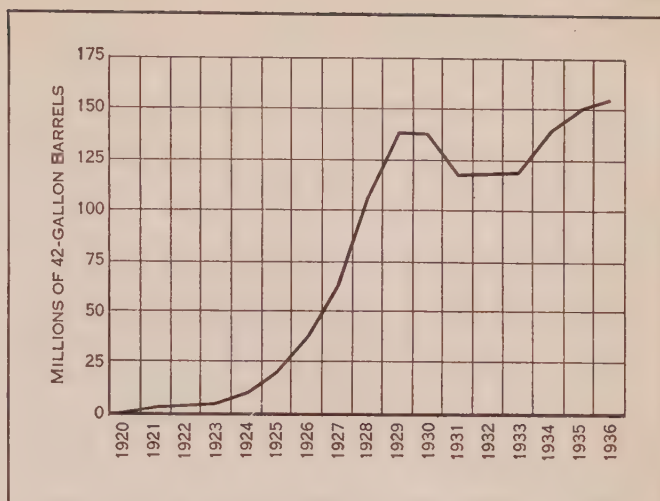
Syphilis education up to the spring of 1937 was concentrated on creating an awareness of the problem. The 518,000 new cases of syphilis and 598,000 old cases, reporting annually to doctors, were emphasized. Pictorial charts were used to emphasize the definite results to be expected from the Co-operative Clinical Group system of treatment and from such venereal disease control programs as those of Sweden and Denmark.

With 1937, syphilis education took on a new note. Major voluntary organizations pressed for definite action to establish venereal disease control programs throughout the country. Among these were the General Federation of Women's Clubs, the Young Men's Christian Association, the American Legion, the United States Junior Chamber of Commerce, the Lions International and many others. Voluntary campaigns were co-ordinated through the American Social Hygiene Association. Syphilis education, therefore, stressed the economic aspects of syphilis. With more than \$41,000,000 spent annually for the repair of those mentally and physically disabled by syphilis, the logic of spending a large fraction of that sum to curtail the disease was pointed out. Second stress of the campaign was the effort to dramatize the scientific character of modern diagnosis and treatment; it was felt that public confidence in the reliability of medical instrumentalities of clinic and laboratory, rather than the traditional horror-emphasis of the earlier school of syphilis education, would be most useful in building effective programs for control.

Public education deserves the lion's share of discussion for the year 1937. To the historian of ten years from now certain promising scientific developments may loom much larger. Fever therapy, long used in the treatment of central nervous system syphilis in certain cases, was applied to the treatment of gonorrhoea; sensational results were reported, but it is yet too early to estimate the permanent place of this therapy. The drug sulphanilamide has been introduced during the year, also in the treatment of gonorrhoea; if long-time clinical observation bears out its early promise it will revolutionize the treatment of gonorrhoea as notably as the arsphenamines revolutionized the treatment of syphilis.

During the year three new American States adopted laws making the blood test pre-requisite to the issuance of marriage licences—Illinois, New Hampshire, and Michigan. Connecticut previously had such a law. Public health facilities for the control of syphilis have expanded rapidly. Of \$10,000,000 currently budgeted from Social Security funds allocated for public health purposes to be used as grants-in-aid to the States, \$827,000 is budgeted for venereal disease control. In addition, other funds will be expended in research and will supplement local health programs. (See also STATE LEGISLATION: *Health*.) (T. P.)

**Venezuela**, a federal republic in Northern South America; language, Spanish; capital, Caracas; president, Eleazar López Contreras. The area is 393,976 sq.mi.; population (1936 census) 3,406,073. The chief cities, with their popu-



CRUDE PETROLEUM PRODUCED in Venezuela

lations, are: Caracas, 203,437; Maracaibo, 99,171; Barquisimeto, 50,774; Valencia, 49,963.

**History.**—The main features of Venezuelan development in 1937 centred about the efforts of President López Contreras to place the country on a relatively democratic basis and at the same time maintain internal stability. During the year a number of alleged Communists were exiled, and past political exiles were denied re-admission. Several strikes were adjusted peaceably, in sharp contrast to the procedure under the recent Gomez dictatorship (1907-35). In furtherance of the reform policy launched in 1936, several laws were enacted for improvement of labour and agriculture and for the better control of foreign residents. Late in the year formal negotiations for a reciprocal trade agreement with the United States were begun.

**Trade and Communication.**—Venezuela has steamship communications through La Guaira (the port for Caracas), Maracaibo, and other ports, and adequate external air communication. There are 683mi. of railways and a relatively good highway system. Navigable rivers, especially the 4,000-mile Orinoco system, provide inland communications. Foreign trade in 1936 aggregated 980,053,169 bolivares in value, an 11.7% increase over 1935. Imports (textiles, foodstuffs, and miscellaneous manufactured articles) totalled 211,590,300 bolivares in 1936, an increase of 27.6%, with the United States supplying 47%. Exports were 768,462,869 bolivares value (an 8% increase), 89% of which was in petroleum products, with coffee, gold, and cacao also important. Most of the petroleum export was to Curacao, with the United States second.

**Production.**—Venezuela is the world's third largest producer of petroleum, with an output for the year ending Oct. 31, 1937, of 175,156,393bbls., over 8% of the world total, against a 1936 production of 153,314,971 barrels. Taxes derived from petroleum comprise approximately a third of the national revenue. The chief agricultural product is coffee, yielding about 125,000,000lbs. annually, 30% of which is exported to the United States. Cacao to the value of 6,774,543 bolivares was produced for export in 1935. Cattle and goats are important resources, providing a valuable hide and skin export. The monetary unit is the bolivar (value: 31¢ U.S.). Venezuela has no external or internal debt. The 1937 budget totalled \$55,044,555.

**Education.**—Compulsory primary education under federal control is provided by law. The school system has been in a thoroughly disorganized condition. A concerted drive for betterment, under direction of Chilean and other foreign educators, was begun, however, by the present Government late in 1936, and the 1937 budget allotted \$4,348,770 (8%) for education.



Venezuela has compulsory military service and a small navy for coastline protection. (L. W. BE.)

**Vermont**, fourteenth State of the United States, first to be added to original thirteen, popularly known as "The Green Mountain State"; area, 9,564 sq.mi.; population according to the U.S. census of 1930, 359,611, with slight increase since, both urban and rural. Capital, Montpelier, 8,000. Largest city, Burlington, 25,000. Of the State's population 118,766 are urban, or 30%; 358,965 whites; 568 coloured; 315,904 native-born; 43,061 foreign-born.

**History.**—Vermont was one of two states to vote a Republican ticket in the last, 1936, presidential election.

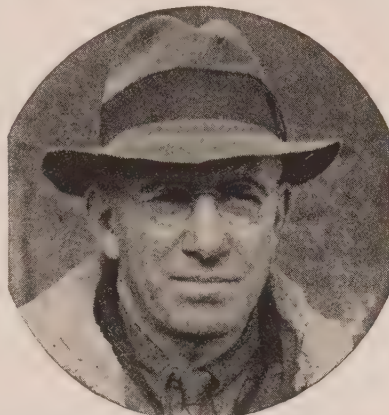
During 1937 it passed an Unemployment Compensation law and increased its Old Age Assistance from \$250,000 to \$475,000 annually. It also passed a number of bills bringing its crime legislation into harmony with other states, and entered into an interstate compact for flood control with neighbouring states. The State park system was expanded. Winter sports were strongly promoted. New airports were constructed. The motor vehicle patrol was increased. Much original work was done in popularizing town reports. An \$800,000 bridge was built across the northern end of Lake Champlain. The state is making plans for a 150th anniversary celebration in 1941. The governor is George D. Aiken; and William H. Willis is lieutenant-governor; Rawson C. Myrick, secretary, and Thomas H. Cave, treasurer.

**Education.**—The public school system of the State is under the supervision of a state commissioner of education and local union superintendents, the revenues being derived mainly from state and local taxes. A plan for equalization of educational opportunity is being worked out. Vocational training is at present confined largely to agriculture and home economics. School buildings and equipment are being improved and teacher courses and requirements strengthened. There are several institutions of higher learning.

**Charities.**—The charitable and corrective institutions consist of a state prison and women's reformatory, industrial school, two hospitals for the insane, a school for feeble-minded and a home for children. A commission, appointed to study the needs of these institutions, has recommended the expenditure of \$442,061 in improvements, which have begun.

**Finances.**—The total revenue from all taxes during the fiscal year ending June 30, 1937, was \$2,945,852, representing a net gain of \$143,961.20. The income tax revenue contributed the largest amount, \$697,976.78. The principal tax gains were from income, beverage and electrical energy taxes; the losses, from inheritance, railroad and insurance company taxes. The new taxes, chief of which was the cigarette tax, totalled \$91,255.23. There was a reduction in the State debt of about \$500,000 and the treasury showed a surplus. The financial situation in the state was unusually good. The banks operated under a unit plan of Federal Deposit insurance. Saving deposits, however, did not come back as rapidly as in many states.

**Industries.**—The number of industries in the State increased during the year, and there was little labour trouble. Milk trou-



GEORGE D. AIKEN, governor of Vermont

## VERMONT—VETERINARY MEDICINE

bles absorbed the interest of farmers and price equalization was sought. A new state milk control act was passed and a milk commission is making a study of the New England milk field. More than 1,000 acres of the new soy bean crop were harvested. The important maple sugar crop was small, but the state's mining industries, headed by marble, granite, slate, asbestos and talc, showed increased activity. (L. W. D.)

**Versailles Treaty:** see GERMANY: *History*.

**Veterinary Medicine.** Problems in which veterinary medicine and human medicine have a common interest are primarily those dealing with diseases transmissible between animals and man.

Tuberculosis eradication in cattle has been vigorously advanced in the United States since 1917. At the close of 1937, 45 of the 48 states in the United States will be officially accredited. In order to be accredited the cattle of a state must show an incident of tuberculosis of  $\frac{1}{2}$  of 1% or less. To achieve this coveted goal more than 178,139,976 cattle have been subjected to the tuberculin test. During this period, 1917 to 1937, respiratory tuberculosis in man has decreased from 124.6 to 49.8 and other forms from 22.5 to 5.2 per 100,000 population. The extent that the eradication of tuberculosis in cattle is responsible to the decrease in man is a subject for careful analysis. Recent investigations show that perhaps all cases of spontaneous tuberculosis in sheep are caused by the avian type of tubercle bacilli.

Studies in the control of Bang's disease in domestic animals is being vigorously pushed forward in nearly all states in the United States on a large scale. Copulation experiments conducted by infecting the prepuce of the bull with cultures of *Br. abortus* definitely show that the disease can be transmitted to the female by copulation. Ellenbogen, Hebrew university, Jerusalem, finds that Syrian hamsters are more susceptible to *Br. abortus* than guinea pigs, therefore, more desirable for testing for that disease because spleen lesions (*splenomegalia*) develop as early as seven days after culture inoculation.

Much attention has been directed to the study of parasitic diseases especially those transmitted to man. During 1937 trichinosis was perhaps the most important of those diseases brought to the attention of the veterinarian. Hall of the United States Public Health Service claims that approximately 17.5% of the population of the United States are infested with trichinae. At once this health problem becomes a problem for the veterinary profession to which rightly belongs the field of production and inspection of meat. It is now known that the principal source of trichinae is not infested rats but infested raw pork scraps fed in garbage. Hall claims that 5% of garbage-fed hogs are infested with trichinae. On the basis of this data hog raisers have been advised to cook all garbage before feeding.

Much research in the past year has been done on equine encephalomyelitis of virus origin. While the disease is not transmissible to man, results in the horse show that prophylactic vaccination and serum treatment show promise. Spirochetal jaundice (Weil's disease) is receiving more than occasional notice. The infection is spread by rats, and investigators have shown that in some parts of the country as high as 33% of the rats are infected. The part that the dog plays in the transmission is an unknown factor, although it is commonly affected.

Much interest is taken in the control of mastitis in cattle. An improved medium for the demonstration of hydrolysis of sodium hippurate by haemolytic streptococci of bovine origin, which may be of practical significance in examining strains of streptococci in milk that is suspected in outbreaks of streptococci infection in man, has been reported. Susceptibility of



swine to the virus of human influenza has been reported. This may be of tremendous value in the control of human influenza. Important developments have been made in the hospitalization of pet animals as shown by the excellent hospitals and hospital staffs through the principal cities. Animal surgery has made wonderful strides through the general use of anaesthetics and the application of modern technics.

(L. E. DA.)

**Victoria**, a state of the Australian Commonwealth, lying in the south-east between latitudes 34° S. and 39° S. and longitudes 141° E. and 150° E., and occupying 87,884 square miles. The State governor, representing H. M. King George VI, is Lord Huntingfield, K.C.M.G. Population (March 31, 1937), 1,856,096, forming 27.2% of the population of Australia. Capital, Melbourne. The premier of a Country party Government is Mr. A. A. Dunstan.

**History.**—The general election was held on October 2. The resulting party strengths were as follows (previous strengths in parentheses): Country party, 20 (20); Labour 21 (18); United Australia party, 21 (24); Independents, 3 (3). The Country party resumed office with the support of labour. A revised constitutional reform bill has since been accepted by both Houses. It provides that the assembly may be dissolved if a bill passed by it is rejected by the Council. If the dispute between the two Houses then continues, the Council may be dissolved, and if it still refuses to pass the bill a final decision lies with a joint sitting of both Houses. Extra delay is required for constitutional bills.

The governor's speech at the opening of Parliament on Oct. 19, 1937, foreshadowed legislation prolonging the Financial Emergency (Mortgages) Acts, amending the law relating to companies and workmen's compensation, and touching, *inter-alia*, moneys held in trust, widows' pensions, fair rents, and the agreement for establishing an aircraft factory at Port Melbourne.

Good rainfall in the latter part of the year gave promise of a satisfactory season, and the economic trend continued upward (*see below*). Transport developments included the construction of a streamlined, air-conditioned train in the State Railways' workshops.

**Trade, Industry, and Finance.**—Production in 1935-36 was valued (gross), as follows: pastoral, £18,044,335; agriculture, £15,863,087; farmyard and dairy, £14,323,741; forestry, fishing, and trapping, £1,647,090; minerals, £1,793,649; total, primary production, £51,671,902 gross value, £44,335,774 net value; manufacturing production, £134,043,170 gross value, £54,043,690 net value. The percentage of unemployment among trade unionists was 9.6 in the second quarter of 1937, against 10.6 in the second quarter of 1936. Total unemployment in the state was estimated at 26,000 in Oct. 1937, a decline of 4,000 since the previous October.

The 1936-37 budget showed an actual surplus of £21,000, instead of an estimated deficit of £110,000. Revenue for 1937-38 was estimated at £25,162,000 (against £25,116,000 received in 1936-37), and expenditure at £25,151,000 (against £25,095,000). Increases of expenditure or losses of revenue in 1937-38 were ascribed to higher wages and shorter working hours (cost, £350,000), cessation of the Commonwealth special grant (£137,000), an extra three months' cost of restoration of salary cuts (£123,000), heavier railway renewals and maintenance charges (£350,000), and falling-off of a Probate Duty (£115,000). The main charge in taxation was a cut of 20% in the rates of unemployment relief taxation, at a cost of £320,000. These adverse budgetary factors were offset by an estimated increase of £240,000 in the yield of income-tax, and by other revenue gains. Both expenditure and revenue totals were reduced by the cessation

of subsidies to the railways for losses on non-paying lines and reductions in freight charges. An Act of 1936 had provided for this and for a compensating reduction of £30,000,000 in the railways' capital liabilities.

(H. V. H.)

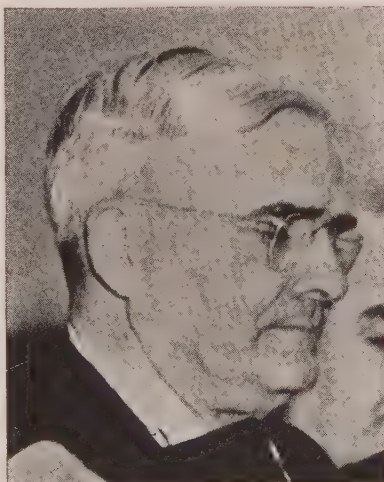
**Vie Femina Heureuse Prize:** *see* LITERARY PRIZES.

**Vienna**, the capital and chief city of Austria. Pop. (1934): 1,874,130. The population shows a slight but steady decline. The industry and banking of Vienna have passed through very difficult times, although as a tourist centre it more than holds its own. Constituted after the War a separate province of Austria, Vienna was reduced in 1934 to the position of a media-tized city, whose burgomaster, however, holds a seat on the Austrian federal council, equally with the eight provincial gov-ernors.

Vienna was the scene of heavy street fighting in Feb. 1934, when many of the great workmen's tenements erected by the Social Democrat Party were severely damaged by shell fire. The Social Democrat Party having been dissolved, a great change came over the administration of the city, which had formerly been in the hands of that body.

**Virginia**, one of the original states of the United States, popularly known as "The Old Dominion"; first settled permanently in 1607; area 42,627 sq.mi.; population accord-ing to U.S. census of 1930, 2,421,851; estimated July 1, 1937, 2,706,000; capital, Richmond, 182,929; seaport, Norfolk, 129,710. Of the state's population in 1930, 785,537 were urban, or 32.4%; 1,770,405 white; 650,165 coloured; 1,746,585 native white; and 23,820 foreign born.

**History.**—On Jan. 1, 1937, the leading state officials were: governor, George C. Peery; lieutenant-governor, James H. Price; attorney-general, A. P. Staples. An unemployment compensation bill, a soil conservation act and other liberal measures were passed by a special session of the general assembly, Dec. 1936. In the Democratic party primary election of Aug. 1937, lieutenant-governor James H. Price was nominated over Vivian Page for governor; Sax-on W. Holt, over Robert W. Daniel for lieutenant-governor; and attorney-general A. P. Staples, re-nominated. These nominees were elected in the usual Democratic victory which won 94 of 100 seats in house of delegates.



JAMES H. PRICE, elected governor, 1937

**Education.**—The state has a free school system for children from seven to 20, inclusive, which is compulsory for all between seven and 15 years. Physical training is obligatory; whites and Negroes have separate schools. The school census of 1935 recorded 731,043 children between seven and 20; 587,486 were enrolled in the public schools in the 1936-37 session, for which total disbursements were \$25,747,668.80 at per capita cost of \$43.83; length of school year, 170 days; 16,825 teachers were employed at average salary of \$841; the school property was valued at \$73,689,633. State expenditures for all educational purposes for the fiscal year ending June 30, 1937, were \$16,904,-



510.59, 23.63% of the total state expenditures. The state supports 10 institutions of higher learning in which, for the 1935-36 session 22,493 were enrolled.

**Charities and Corrections.**—The following institutions are under direction of the commissioner of public welfare: hospitals for insane, epileptic, and feeble-minded; tuberculosis sanatoria; schools for deaf and blind and commission for blind; Lee Camp for Confederate men and women; charity cases in University and Medical College hospitals; penitentiary; farm; convict camps; jails; industrial schools for juvenile delinquents; detention homes and boarding homes for State wards; children's bureau; and farms for female delinquents. The State also subsidizes in part the Home for Incurables and the Traveler's Aid Society.

The general assembly of 1936, for the first time, made State relief funds available for destitute persons. Before that poor relief proper in Virginia was financed and administered by local county and city Governments. The Public Assistance Act of 1936 strengthened the local relief systems in that it required their reorganization that they might qualify for State funds. Determinable on a basis of population, the general assembly allocated \$950,000 for local relief purposes for the year ending June 30, 1937. Local units had to provide funds amounting to 60% of any State funds which they were granted. Application of 91 counties and 23 cities for \$806,969.04 was approved and was matched by local funds of \$484,541.34, making the total amount available \$1,291,510.38. Total State expenditure on public welfare for same year was \$4,432,851.20, 6.19% of total State expenditure.

**Banking and Finance.**—At the beginning of 1937, Virginia had 191 licensed State banks and 132 national banks. Total assets of State banks \$255,190,000; of national banks \$404,811,000; combined total assets \$660,001,000. Combined liabilities of State and national banks included aggregate deposits of \$573,311,000, capital stock of \$46,573,000, surplus of \$21,781,000, and net undivided profits of \$4,762,000. On June 30, 1937, the balance in the State Treasury was \$10,728,340.09; the bonded debt, \$22,608,151.20; and the sinking fund, \$5,005,239.23. The State had no floating debt. On April 30, 1937, the assessed valuation of all property in the State was \$2,398,647,388; the total value of real estate assessed for local taxation, \$1,141,358,157. Revenues and expenditures for fiscal year ending June 30, 1937 were \$78,823,888.12 and \$71,614,335.89, respectively.

**Agriculture, Manufacturing, Mining.**—The total acreage harvested in 1936 was 3,693,700; value of all crops, \$107,075,000; value of livestock including poultry, \$57,140,000. For the same year, 2,475 manufacturing plants reported to State Department of Labor and Industry an output valued at \$902,348,968. Leading products were tobacco, textiles, transportation equipment, food, paper and printing, chemicals, and wood. The 75 coal mining and coke plants reporting in 1936 had an output valued at \$20,185,511; while 71 other mining and quarrying plants reported a product amounting to \$6,957,387. (J. S. Br.)

## Virginia, University of.

A State institution for higher education situated at Charlottesville, Va. The original university was designed and built by Thomas Jefferson. There are six departments; two academic—the college and department of graduate studies; and four professional—law, medicine, engineering and education. The institution has a productive endowment fund amounting to \$11,000,000, and receives from the State an annual appropriation of \$500,000. The total budget for 1937-38 was \$2,300,000. The corporate name of the university is "The Rector and Visitors of the University of Virginia." In 1937 the faculty and officers numbered 269, the students 2,681 (2,594 men and 87 women), and the number of volumes in the library 290,000.

The most significant developments in 1937 were the inauguration of new requirements for the cultural undergraduate degrees in the college; a new series of buildings to house the department of engineering, constructed at a cost of \$425,000; and the beginning of construction of a new library building to house the general library of the university, at an estimated cost of \$950,000.

(J. L. N.)

**Virgin Islands,** a United States West Indian dependency east of Porto Rico, comprising St. Croix, St. Thomas, St. John, and smaller islands; language, English; capital, Charlotte Amalie (formerly St. Thomas); governor, Lawrence W. Cramer. The area is 133 square miles. Population (census, 1930), 22,012 (a decrease of almost 16% since 1917 and less than half the early 19th century total), and is largely negro and mixed. The principal cities are Charlotte Amalie (St. Thomas), 7,036, and Christiansted (3,767), and Frederiksted (2,698) on St. Croix. Under the Organic Act of the Virgin Islands of 1936, government is administered by a governor appointed by the President of the United States, and an elected legislative assembly. Developments in 1937 were featured by efforts to organize the government under the Organic Act and to continue the economic rehabilitation begun in 1934. The political agitation which had preceded the Organic Act continued when the first legislative assembly met in November, and culminated in a spectacular dispute between the governor and the assembly, with their respective rights. Economic development largely through public works was such that, by mid-year, unemployment was virtually eliminated on St. Croix and materially reduced elsewhere. This was chiefly the result of Federal expenditures, but the development of the rum industry and the tourist trade and a policy of homestead allotments helped. Improvement of the harbour of Charlotte Amalie at a cost of \$743,000 and extensive dock construction was recommended by the governor. The islands were formerly an important commercial and coaling centre, but now depend primarily on sugar, although the development of other assets is being stimulated, especially through the Federally-controlled Virgin Islands Co. In the year ending June 30, 1937, imports were \$3,819,618 (foodstuffs, 23.2%; fuel oil, 20.9%; machinery and vehicles, 11.5%), with 67% from the United States, 13% from Curacao; exports were \$1,040,687 (64.5% sugar and rum), 94% to the United States. Sugar production is limited by quota to 5,000 tons annually. For the fiscal year 1936-37 Federal contribution to insular expenses was \$130,000, a reduction of \$35,000. Public school enrolment in 1936-37 was 3,249. Annual expenditure for education is approximately \$105,000. Over 90% of the population is literate. (L. W. Be.)

**Vital Statistics:** see BIRTH STATISTICS; DEATH STATISTICS; DIVORCE; INFANT MORTALITY; SUICIDE STATISTICS.

**Vitamins.** The known vitamins are designated respectively: A, B<sub>1</sub> (or B), B<sub>2</sub> (or G), C, D, and E. Four (B<sub>1</sub>, B<sub>2</sub>, C, D) have now been chemically isolated, together with the natural precursor of another. All are determinants of normal physiological activity, each having its own specific functions. All are present in natural foodstuffs, on which, and not on commercial vitamin-concentrates, man should ordinarily rely for his supply.

**Vitamin A** (C<sub>20</sub>H<sub>30</sub>O) is derived directly or indirectly from the carotene pigments of plants.

**Principal sources:** green and yellow vegetables, fish-liver oils, egg yolk, milk, butter, cream, and cheese.

**Functions:** promotes growth; necessary for reproduction; preserves structure and functions of epithelial tissues; maintains resistance to infection.



*Effects of deficiency:* failure of growth, interference with ovulation, night-blindness, dry skin, "toad"-skin, and infections of eye, nasal passages, throat, lungs, stomach, intestines, skin, urinary tract, and (in females) reproductive tract.

**Vitamin B<sub>1</sub> (or B).** Aneurin ( $C_{12}H_{16}N_4OS$ ).

*Principal sources:* yeast, whole cereals, legumes, nuts, green vegetables, eggs, cheese, fish-roe, kidney, liver.

*Functions:* necessary for carbohydrate metabolism and neuromuscular efficiency.

*Effects of deficiency:* lack of appetite, impaired growth or loss of weight, poor digestion, sluggish bowel-action, cardiac disorder, fatigue, nervousness, neuritis, disturbed lactation, beri-beri.

**Vitamin B<sub>2</sub> (or G),** ( $C_{17}H_{20}N_4O_6$ ); belongs to the flavin group of pigments.

*Principal sources:* yeast, milk, green vegetables, lean meat, liver, kidney.

*Functions:* helps to sustain health of skin, mucous membrane of alimentary tract, and nervous system.

*Effects of deficiency:* failure of growth, sore tongue and mouth, skin lesions, gastro-intestinal inflammations, pellagra.

**Vitamin C.** Ascorbic acid ( $C_6H_8O_6$ ).

*Principal sources:* citrus and other fruits, raw vegetables, red pepper, milk, liver.

*Functions:* reducing agent, playing part in tissue-respiration; preserves tone of blood capillaries; enables cells to form their intercellular cement substance.

*Effects of deficiency:* haemorrhages, sallow skin, imperfect dental structure, fragile bones, swelling of joints, unhealthy gums, gastro-intestinal disorder, latent or manifest scurvy, lowered resistance to infection.

**Vitamin D.** Calciferol ( $C_{27}H_{42}O$ ); obtained from irradiated ergosterol.

*Principal sources:* direct insolation or artificial irradiation of human body, fish-liver oils, egg-yolk, butter, liver, kidney, irradiated foodstuffs containing ergosterol.

*Functions:* regulates calcium-phosphorus metabolism; maintains calcium and phosphorus levels in blood; fixes calcium in bones and teeth.

*Effects of deficiency:* defective bone and tooth formation, fragility and softening of bone, bone deformities, rickets, dental caries, tetany, muscular weakness, difficult labour due to deformed pelvis, tendency to respiratory disease, chilblains.

**Vitamin E.** Chemical structure not definitely known.

*Principal sources:* wheat-germ oil, whole cereal grains, lettuce, watercress, molasses, vegetable oils.

*Functions:* maintains placental function in females and germ cell maturation in males.

*Effects of deficiency:* sterility, foetal death, habitual abortion. (See also CHEMISTRY: *Vitamins*; CHEMISTRY, APPLIED; DIETETICS; FLOUR AND FLOUR MILLING; SOAP, PERFUMERY, AND COSMETICS.)

(R. McC.)

## Vocational Education,

which may be defined as that form of education which prepares persons for useful employment, has made definite progress during the year 1937. One cannot view carefully the whole field of education in the United States, particularly on the levels below that of professional training, without realizing that the vocational aspects are receiving increased attention from the educator and the general public. An increasing consciousness of the need for improved and more numerous vocational education offerings is distinctly noted in many sections of the country. Programs curtailed during the depression are being restored to previous levels, and definite growth in enrolment of students and in range of courses offered is found throughout the United States.

Perhaps the outstanding event in vocational education during 1937 was the increased Federal subsidy under the George-Deen Act which became effective on July 1, and which more than doubled the amount of aid to the states on the part of the Federal Government. Supplementing the aid already available under the Smith-Hughes Act of 1917, the George-Deen Act added more than \$14,000,000 of annual subsidy available for vocational education. While the Federal aid under the Smith-Hughes Act provided for training in agriculture, home economics, and trades and industries, the new act goes farther in its scope and includes the distributive occupations. Greatly enlarged programs are noted in the fields of work previously subsidized, and substantial beginnings are found in retail selling training and in other phases of the distributive occupations.

New building programs for industrial education are in evidence in several cities, notably New York and Philadelphia. In many places also one finds new courses developed to meet training needs in newly developing fields such as Diesel engines, air-conditioning and the electronics industry. Organized courses appeared during the year in training for public service occupations such as police service, fire fighting, and motor vehicle inspection.

Significant also is the increase in educational offerings on levels below and above that of the skilled trades. Training courses for technicians on a level above that of the skilled trades and below that of the engineering college, prevalent in many European countries but found in few places in the United States, are receiving increased interest and are appearing in scattered areas. Many of the industrial schools have added courses for the training of semi-skilled operatives, below the skilled trades level.

Apprenticeship training programs operated by industrial plants, or as a part of the public school system, have seen some growth, although this has been slow. The Federal Committee on Apprenticeship Training has been active in promoting apprenticeship and in the development of standards for apprentice training. Vocational courses for out-of-school youth have received increased attention. The Federal emergency agencies dealing with youth, particularly the Civilian Conservation Corps and the National Youth Administration, have been active in carrying on and in stimulating such training programs, and many municipal and State educational departments are working toward a better solution for this important problem.

The year 1937 has been a year of progress for vocational education in the United States. Much has been added to the vocational offerings available to youth and adults, but perhaps more significant is the amount and quality of attention which is being given to the problems of vocational education by the educators of the nation; Federal, State and local.

(L. A. E.)

**Vocational Guidance.**—The purpose of vocational guidance is to discover the fitness of individuals for various occupations, and to give suitable advice. It may profitably be contrasted with vocational selection, the aim of which is to advise employers concerning the relative merits of various candidates for employment, promotion, or training. Both these procedures utilize tests, questionnaires, and interviews, but have different objectives. In vocational guidance, the chief aim is to satisfy the applicant; in vocational selection, the employer. This leads to a difference in technique, since most individuals seeking vocational guidance voluntarily reveal many of their defects, while in vocational selection, this frankness cannot reasonably be expected.

The vocational adviser's aims are: (1) to collect all data relevant to the particular vocational problem of the individual concerned; (2) to impart, in language suitable to the candidate, the relevant knowledge; (3) to interpret the data about the candidate in the light of the adviser's knowledge of requirements and opportunities in the professions and trades; (4) to formulate



suggestions to the candidate or his parents; (5) to persuade them to accept an apparently desirable course of action.

The adviser surveys the candidate's financial, social, geographical, and other circumstances, his bodily make-up, dress, speech, and manners, his level of intelligence, his special aptitudes, abilities, and interests, and compares these data with special reports about the demands upon the candidate's abilities likely to be made by different occupations. Variations between the techniques of different vocational advice organizations (in the United States and Britain at least), are, comparatively speaking, not great.

Most tests are intended to investigate general intelligence or certain special aptitudes; e.g. mechanical ability. Tests for interests and dispositions are easy to devise, but difficult to interpret at present. Many experienced advisers use tests with great discretion, regarding them as very valuable supplements to information obtained in more direct form. It is important to emphasize this point, since some sweeping assertions which have been made about the success or failure of vocational guidance are really about the success or failure of the tests taken by themselves.

Psychological methods for vocational guidance are extensively used in the United States, Great Britain, Germany, France, U.S.S.R., Switzerland, Italy, Spain, the Scandinavian countries, Holland, Belgium, Australia, Africa, China, Japan. Obviously, the different political, economic, and other aims and ideals of these countries determine, to a certain extent, the aims and methods of vocational guidance used in them. Considering the relative newness and heterogeneous personnel of the vocational guidance movement, the work is already well documented, especially in the book by Keller and Viteles. (See also EDUCATION.)

**Vocational Guidance:** see VOCATIONAL EDUCATION: *Vocational Guidance*.

**Wages and Hours.** The substantially higher level than in 1936 of economic activity in the United States during the first 10 months of 1937 brought employment

and payrolls in manufacturing and most of the non-manufacturing industries well up toward 1929 levels. The percentage increase in manufacturing payrolls in 1937 over 1936 was nearly twice as great as the percentage increase in employment (see Table I), due mostly to widespread increases in wage rates. The U.S. Bureau of Labor Statistics reported in August 4,250,000 people had received wage increases between Oct. 15, 1936, and June 15, 1937.

This number included some wage earners who had received more than one wage raise.

The increases in hourly earnings referred to were due to three principal factors, the rising cost of living, the increased demand for labour, and, most important, the rapid growth and increased pressure of labour unions.

The following are typical illustrations. Between August 1936 and August 1937 employment in manufacturing industries as a whole increased 9.4% and payrolls 24.3%, while average hours per week decreased 1.9%. In the iron and steel industries the changes were: employment +14.1%, payrolls +38.7%, weekly hours -3.1%; in the furniture industry, employment +9.2%, payrolls +15.7%, hours -6.7%; in textiles, employment +1.0%, payrolls +5.4%, weekly hours -6.5%; in food products, employment +4.0%, payrolls +13.9%, hours +3%; in tobacco manufactures, employment -1.9%, payrolls, +6.9%, and hours -1.7%; and in automobiles, employment +20.7%, payrolls, +38.3%, and weekly hours, -4.4%.

Turning to the non-manufacturing industries, we find a similar story. In anthracite mining average hourly earnings were 9.9% higher, and in bituminous they were 12.0% higher in August 1937 than in August 1936. In metalliferous mining the increase in hourly earnings was 17.7%; in quarrying, 13.8%. In wholesale trade it was 6.1%; in retail trade, 7.6%; in hotels, 7.7%; laundries, 6.2%; and the building industry, 15.2%. Of the more than a hundred industries whose wage statistics are tabulated by the U.S. Bureau of Labor Statistics only millinery manufacturing showed lower hourly earnings in August 1937 than in August 1936. The decline of 7.1% in that industry accompanied a decrease of 10.4% in employment and 16.4% in total payrolls. In 1937 it was a declining industry.

The range in wage increases in all industries other than millinery was from an increase of 1.6% in hourly earnings on steam railroads where wages were already at high levels in 1936, to an increase of 28.9% in blast furnaces. The typical increase in hourly earnings was between 10% and 25%, while hours per week typically decreased, nearly all of the exceptions being industries which were working below their usual weekly schedule, such as agricultural implements, machine tools, the transportation industries (both the operating and manufacturing divisions, except automobiles and aircraft), and manufacturing silverware, which increased up to approximately their usual weekly hours.

The picture is different for the last two months of 1937. The rapid recession of business and employment which threw more than a million people out of work between October 1 and the end of the year checked further wage increases, and reduced weekly earnings of those employed in many of the industries by reducing hours of operation.

Table I gives the index numbers of employment and payrolls in the manufacturing industries, and compares 1936 and 1937 by months. The greater increases of payrolls than of employment is shown throughout the table.

The "all manufactures" employment index for 1937, 11 months, (100.3) may be compared with the 1929 index of 104.7, the 1937 payroll index, 99.5, with 109.1, in 1929.

Table II shows the average hours worked per week, earnings per hour, and weekly earnings in the principal industry groups of the



**SEARCY**  
BUSINESS RECESSION viewed as an "unsightly defect in the winter landscape" by Jensen in the *Chicago Daily News*



# WAGES AND HOURS

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United States for the months of February, June and August, 1937. February was selected because less affected by the Christmas season and January inventories. June shows the mid-year situation and is typical of the hours and wages situation reached in 1937. August was the most recent month for which detailed figures were available. Very little change occurred between June and August. When the figures for November and December are available they will show, probably, some decrease in average weekly working hours and average weekly wages due to the sharp recession which occurred during those months.

In June 1937, there were six industry groups in which the average hourly earnings were between \$.90 and \$.971 per hour. The highest average earnings obtained in the printing of newspapers and periodicals. The other high wage industries were rubber tires, petroleum refining, the building trades, anthracite mining, and automobile manufacturing. There were nine industries with average earnings of \$.803 to \$.89 per hour, including such widely different lines as bituminous coal mining, blast furnaces, calculating machines, beverage manufactures, and electric light and power plants. About half of the industries of the country paid average wages from \$.60 to \$.80 an hour; 21 industries between \$.50 and \$.598; and 12 were below \$.50 an hour.

The worst earnings were in cottonseed oil and cake mills, where the average wage was but \$.251 per hour. This is largely southern negro labour. Men's furnishings paid but \$.355 and "shirts and collars" but \$.393. A great deal of female labour is used in these industries.

The other industries in this "less than \$.50 an hour" group ranged between \$.42 and \$.48 an hour, including such important branches of manufactures as cotton textiles, silk and rayon, butter and cheese making, confectionery, cigars and cigarettes, and fertilizers. The \$.50-\$.60 an hour group included a particularly large number of consumers' goods industries, e.g., boots and shoes, baking, flour milling, furniture, clocks, radios and phonographs, knit goods, woollens and worsteds, and ice cream manufacturing.

The average earnings of wage earners employed in factories during the summer of 1937 had higher buying power than the average wages of 1929. The index number of retail food prices in July 1937 was 85.9; in July 1929, 106.5 (1923-25=100). The wholesale price index number was substantially lower for all

Table I—Indexes of Employment and Pay Rolls in All Manufacturing Industries Combined, and in the Durable and Non-durable Goods Groups

(Adjusted to 1933 Census of Manufactures, 3 Year Average. 1923-25=100)

	All Manufactures				Durable Goods				Non-durable Goods			
	Employment		Payrolls		Employment		Payrolls		Employment		Payrolls	
	1937	1936	1937	1936	1937	1936	1937	1936	1937	1936	1937	1936
January . . . . .	96.5	86.8	90.7	73.8	90.4	78.7	86.6	66.9	103.0	95.4	96.0	82.5
February . . . . .	99.0	86.0	95.8	73.7	93.2	78.6	92.5	66.6	105.2	95.8	99.9	82.7
March . . . . .	101.1	87.9	101.1	77.6	96.4	80.2	100.0	71.8	106.1	96.1	102.6	84.9
April . . . . .	102.1	89.1	104.0	79.3	98.6	82.3	106.4	76.0	105.9	96.3	102.9	83.5
May . . . . .	102.3	89.8	105.2	80.8	99.0	84.0	107.5	78.5	104.8	96.0	102.3	83.8
June . . . . .	101.1	90.1	102.9	81.1	98.8	84.7	104.6	79.0	103.5	95.9	100.8	83.9
July . . . . .	101.4	91.2	100.4	80.2	98.9	84.6	100.7	75.9	104.1	98.2	100.0	85.6
August . . . . .	102.3	93.5	103.8	83.5	98.1	84.7	103.9	77.0	106.8	102.8	103.6	91.8
September . . . . .	102.1	95.5	100.1	83.6	97.3	85.7	99.4	77.2	107.3	105.9	100.9	91.6
October . . . . .	100.5	96.7	100.1	89.0	95.5	89.2	101.7	85.3	103.6	104.7	98.2	93.7
November . . . . .	94.7	96.9	89.5	90.7	92.4	91.0	89.9	89.9	97.3	103.3	88.9	92.9
December . . . . .	98.1	98.1	95.2	95.2	92.7	92.7	93.4	93.4	104.0	104.0	97.5	97.5
Average . . . . .	*100.3	91.9	*99.5	82.4	*96.3	84.7	*99.3	78.0	*104.3	99.5	*99.7	87.9

\*Average of 11 months.

(This table rearranged from table published monthly in *The Monthly Labor Review*, United States Bureau of Labor Statistics, with the addition of some recent data from advance releases which will appear in the *Review* in 1938 issues.) Comparable data for earlier years will be found in *The Monthly Labor Review*, April, 1937.

Table II—Average Hours per Week, Average Earnings per Hour and Average Weekly Earnings in Major Industrial Classifications, February, June and August, 1937

(Compiled from *The Monthly Labor Review*)

Industry	Av. Hrs. Per Wk.			Av. Earnings Per Hr.			Av. Earnings Per Wk.		
	Feb.	June	Aug.	Feb.	June	Aug.	Feb.	June	Aug.
All Manufacturing Industries . . . . .	40.4	39.2	38.7	\$ .602	\$ .653	\$ .658	\$24.73	\$26.00	\$25.89
Durable Goods . . . . .	41.6	40.7	40.1	.651	.714	.723	27.54	29.36	29.33
Non-durable Goods . . . . .	39.2	37.6	37.2	.551	.586	.590	21.68	22.14	22.07
Iron and Steel (not including machinery) . . . . .	42.3	40.2	39.6	\$ .671	\$ .760	\$ .776	\$28.71	\$31.06	\$31.52
Machinery . . . . .	42.6	41.8	40.8	.643	.704	.710	27.50	29.41	28.99
Transportation equip. . . . .	38.7	37.0	36.0	.705	.868	.885	30.67	32.00	31.71
Railroad repair . . . . .	42.0	44.8	44.2	.690	.690	.711	29.50	30.80	31.31
Non-ferrous metals . . . . .	41.0	40.2	39.6	.593	.651	.656	25.05	26.38	26.22
Lumber and products . . . . .	42.0	42.8	42.0	.461	.525	.532	19.73	22.10	22.08
Stone, clay, glass . . . . .	39.4	39.0	39.7	.578	.620	.630	22.66	24.53	24.85
Textiles and products . . . . .	37.8	35.1	34.4	.477	.502	.515	18.17	17.73	17.77
Leather and products . . . . .	41.4	38.1	37.8	.520	.535	.541	21.32	20.01	20.29
Food and kindred prod. . . . .	41.7	41.4	41.0	.561	.600	.580	23.12	24.86	23.80
Tobacco manufactures . . . . .	36.6	38.0	37.8	.437	.451	.460	15.98	17.15	17.39
Paper and printing . . . . .	40.6	39.7	39.1	.708	.745	.741	27.68	28.61	28.13
Chemicals and petroleum refining . . . . .	39.8	39.6	39.5	.737	.737	.756	26.44	28.89	29.41
Rubber products . . . . .	37.6	35.7	34.7	.748	.788	.786	27.54	27.51	26.53
Non-manufacturing									
Coal Mining:									
Anthracite . . . . .	28.3	31.2	21.7	\$ .704	\$ .917	\$ .921	\$22.66	\$28.09	\$19.25
Bituminous . . . . .	31.4	25.0	26.6	.797	.886	.894	24.65	23.10	23.58
Metalliferous mining . . . . .	40.3	43.5	44.5	.659	.717	.711	28.80	31.16	31.62
Quarrying and non-metallic mining . . . . .	40.3	44.4	44.3	.595	.538	.541	20.35	23.84	24.06
Crude petroleum . . . . .	39.2	40.0	39.5	.806	.828	.839	32.23	33.57	33.50
Telephone and telegraph . . . . .	37.0	37.0	39.0	.804	.817	.824	29.44	29.95	30.94
Electric light, power and gas . . . . .	40.5	40.6	39.3	.816	.826	.862	32.90	33.57	33.64
Wholesale trade . . . . .	42.6	43.3	43.4	.672	.707	.723	28.68	30.56	31.31
Retail trade . . . . .	43.8	43.4	43.5	.527	.555	.566	21.31	22.06	22.58
Hotels (year-round) . . . . .	48.2	47.7	47.3	.290	.307	.311	14.44	14.83	14.86
Building . . . . .	31.7	33.8	34.7	.874	.925	.930	27.83	31.25	32.28

classes of commodities tabulated by the Bureau of Labor Statistics except building materials, and retail prices are based upon these wholesale prices. Average weekly earnings for 1929 were \$26.30; for February 1937, \$24.37; for June \$26 and for August \$25.89. In each of these months the purchasing power or average wages exceeded that of 1929. But there were wider discrepancies in welfare between individual wage earners, and also industry groups in 1937 than in 1929. The nearly 3,000,000 (on the average) people employed on public works of an emergency character averaged far lower weekly earnings than they earned in 1929. The coal miners had less employment than in 1929, and their annual earnings were unquestionably down more than was the 1937 cost of living compared with 1929. Manufacturing, transportation, mining and construction were not giving employment to as large a proportion of the population as in 1929. It is easy, therefore, to be misled by the statistics showing higher "real wages" for those earning month by month in 1937 the average weekly earnings characteristic of the year.

Another point should be noted in this connection. After calling attention to the wide variations in both hours and earnings



which are found within each industry, both geographical variations and establishment variations, the United States Bureau of Labor Statistics pointed out that "there are indeed few industries that do not have submarginal fringes which create problems of a serious nature." (*Monthly Labor Review*, November, 1937, p. 1060.)

The wages of farm labour were about 15% higher in 1937 than in 1936, judging by the reports of the U.S. Bureau of Agricultural Economics. Monthly wages, with board, averaged \$25.28 in July 1937, and \$22.07 in July 1936; daily wages with board \$1.34 in July 1937, and \$1.15 in 1936. (D. D. L.)

**Great Britain and Europe.**—In Great Britain money rates of wages over industry as a whole have varied comparatively little in recent years. The effect of the world depression had been, by 1933, to reduce the general average of wage-rates by about 5% below the level of 1929. These reductions had been approximately cancelled by the end of 1936; and in 1937 wage-rates rose slowly to 4 or 5%, on the average, above the 1929 level by the end of the year. These figures, however, take no account either of changes in the cost of living or of variations in actual earnings in times of good and bad trade. Nor do they take account of the effects of the migration of workers to different employments, which may be better or worse paid; but this factor, important in the long run, is not very significant over short periods.

During the world depression prices fell very greatly, and the prices of foodstuffs were especially affected. This reacted on the cost of living, so that real wages for full-time employment rose substantially, even when money wages were being reduced. They were actually 11 or 12% higher in 1933 than in 1929. But in the recovery, especially from 1936, the cost of living rose faster than money wages, so that by the autumn of 1937 real wages for full-time work had been appreciably reduced. By November the cost of living was 60% above the level of 1914, as compared with 36% in the middle of 1933.

As against the fall in the purchasing value of wage-rates, employment had improved, so that there were more workers in employment and a larger proportion of them working a full standard week, or even overtime. The effect of these changes cannot be statistically measured, but they were considerable in certain trades, at any rate until the autumn, when some tendency to recession appeared (*see* LABOUR). Approximately the workers in Great Britain were probably, on the average, from 6 to 7% better off in purchasing-power at the end of 1937 than in 1929. This, of course, does not apply to South Wales, or other depressed areas.

Over the world as a whole, price changes have played an important part in varying during the last few years the level of real wages. There is great difficulty in securing comparable statistics for different countries, either for money wages or for the cost of living; and, both absolutely and comparatively, the figures in the accompanying tables should be regarded as only approximate. In respect of money wages, some countries compile their figures in terms of wage-rates, and others in terms of actual earnings. Figures of hourly earnings can, however, be treated as roughly comparable with figures of rates. Measurements of the cost of living differ considerably in scope, some being based mainly or exclusively on food prices, whereas others take account of rent and other forms of expenditure. In the two tables dealing with money and real wages, the figures used are those cited by the International Labour Office as reliable enough to be used for approximate comparisons.

It will be seen that, by 1932, money wages had been reduced in most countries included in the table, but that there had been small increases in France and Scandinavia, and a very large increase in the U.S.S.R. Real wages for full-time work had, however, risen in all these countries (except that no measure of real

Table III—Money Wages—Index Numbers

(1929 = 100)

	1932	1935	1936	1937
Great Britain (weekly rates) . . . . .	96	97	100	103 (June)
France (daily rates) . . . . .	104	99	114	..
Germany (hourly rates) . . . . .	82	79	79	..
U.S. (hourly earnings) . . . . .	84	102	105	120 (June)
Japan (daily earnings) . . . . .	85	88	88	93 (June)
Italy (daily earnings) . . . . .	86	83	86	107 (June)
Sweden (hourly earnings) . . . . .	101	101	101	..
Denmark (hourly earnings) . . . . .	102	104	105	105 (March)
U.S.S.R. (monthly wages) . . . . .	150	240	..	..

Table IV—Real Wages—Index Numbers

(1929 = 100)

	1932	1935	1936	1937
Great Britain . . . . .	110	111	111	111 (June)
France . . . . .	107	117	124	..
Germany . . . . .	104	99	98	..
U.S. . . . .	108	123	123	135 (June)
Japan (1932 = 100) . . . . .	100	94	92	93 (June)
Italy . . . . .	104	108	104	117 (June)
Sweden . . . . .	110	108	109	..
Denmark . . . . .	114	105	105	103 (March)

wages is possible for the U.S.S.R.). By 1936 money wages had regained the pre-slump level in Great Britain, and advanced beyond it in the United States, and a long way beyond it in France. In Scandinavia there had been little change; and wages were still much below the 1929 level in Germany, Italy, and Japan. In terms of real wages, France and the United States made the best showing, with advances of more than 20% above 1929, and Great Britain and Sweden also showed considerable advances. In Germany, on the other hand, real wages (even apart from the shortage of actual supplies at the controlled prices) were still below the 1929 level, and in Japan there had been a much larger fall.

It is difficult, with the figures so far available, to say much about the developments in various countries in 1937. In the United States there were considerable wage-advances in the early part of the year, involving large gains in real wages. Italy, too, shows a rapid rise, which is not very easy to account for in face of a large rise in prices. On the other hand, in both Great Britain and the Scandinavian countries there was undoubtedly some tendency in 1937 for real wages to decline.

In recent years, hours of labour in Great Britain have been subject to very little change. Standard hours of labour in most manufacturing industries are 47 or 48 per week—47 in the engineering, and 48 in the textile trades, for example. Coal miners work a shift of seven and a half hours, plus one winding time, averaging a further half-hour. Dockers work an eight-hour day, and railwaymen a 48-hour week. Builders average, over summer and winter, from 44 to 45 hours a week. Municipal employees vary from 44 to 48 hours. All these figures are exclusive of overtime, which is usually paid for at a higher rate.

In the United States the working week was, until the New Deal, usually longer than in Great Britain. It is now in most trades definitely shorter. The 40-hour week has been established in a large number of industries, including building, engineering, and printing; and some trades (*e.g.* bakers and furniture workers in New York) work only 35 hours. On the other hand, hours are not uniform over the whole country; and transport workers mostly work 45 or 48 hours.

In France, until 1936, the 48-hour week was in force in the majority of industries; but in 1936 and 1937 the 40-hour week was applied by decree to most of the major occupations as a result of the great strike movement of 1936. When the Blum Government was replaced by that of M. Chautemps in 1937, the employ-



ers, supported by some of the Radicals in the Cabinet, demanded a reversal of the Blum decrees; but in face of strong resistance from the trade unions and from the Socialist members of the government, only minor modifications had been made up to the end of the year. These, for the most part, do not withdraw the 40-hour week, but only introduce greater elasticity into its working (*e.g.* on the railways).

Of other important industrial countries, Sweden and Denmark, and also Switzerland, Holland, and Belgium work mainly a 48-hour system, with shorter hours in certain trades. In Poland the standard hours vary by district from 46 to 48. Canadian hours vary greatly, both by trades and by areas, with from 44 to 50 hours as the most usual limits. Australia has for most organized trades a 44-hour week; but some transport workers work 48 hours. New Zealand has established a 40-hour week in many trades. No statistics are available for normal hours in either Germany or Italy.

The standard hours of labour differ considerably in certain cases from the average hours per week actually worked. In the United States in 1937 actual factory hours averaged from 39 to 41 per week, and in France, despite the 40-hour week, two-thirds of the workers covered by official returns were actually working, on account of overtime, more than 48 hours. It is possible to give some figures of actual hours worked for countries which publish no statistics of normal hours. Thus in Germany, factory hours in 1937 averaged seven and a half per day, as against seven in 1932 and rather over seven and a half in 1929. In Italy, hours in 1937 averaged 166 per month, as compared with 182 in 1929 and 169 in 1932. In Japan, both in 1929 and in 1937, the usual factory hours actually worked were from nine and a half to ten per day.

The question of working hours, however, cannot be adequately considered entirely by itself. In Great Britain at any rate there has been in recent years a great average increase in the time taken in getting to and from work. This is an inevitable consequence of the growth of cities and of the spread of urban populations over a wider area. It constitutes, for many workers, a substantial addition to the length of the working day, and has added impetus to the movement for shorter working hours. But the employer, when he finds it necessary to yield to the demand for a shorter working week, naturally endeavours to check the consequent rise in costs by more intensive use of labour during the reduced hours of employment. The growing mechanization of industry makes this easier, by transferring the control of the pace of work increasingly from the individual worker to the machine—or the power plant. The worker must either adapt himself to the pace set by the machine, or seek other employment. Even when the pace cannot be determined in this way directly by the speed at which the machines revolve, a similar result can be secured by means of squad work, in which each individual must adapt himself to the pace of the group as a whole. These conditions of speeding up, closely associated in the workers' minds with the "Bedaux" and other systems of "efficiency engineering," have come to apply very widely in the industries engaged in mass-production of consumers' goods; and somewhat similar methods have been adopted extensively in coal-mining, iron and steel manufacture, and other basic industries. They give rise to frequent complaints that older men, on regaining a job after a long spell of unemployment, find themselves unable to stand the pace and the changed technical conditions of work, and often slip back into unemployment, and are discarded in favour of younger and more adaptable workers.

In view of these conditions of additional travelling time and greater intensity of labour, the shortening of the working week in most occupations since 1914 has not been unmixed gain. Never-

theless, it has considerably enlarged the workers' opportunities of leisure—for even if work has come to demand greater intensity of effort, the demand made on the worker is more often for nervous than for muscular energy, and does not result in the same sort of weariness at the end of the working day. This change in the character of the labour process, especially in the newer industries, may have a close connection with the increasing demand for amusement, of which there is evidence in the very rapid increase in the numbers employed in the amusement industries.

In general it has been found that, in the more highly mechanized trades, the reduction of the hours of labour has involved, in the long run, little or no increase in labour costs, or has even been accompanied by a reduction. It has, however, led to an increased adoption of the shift system, in order to spread the capital costs over a larger volume of output. Shorter hours have led to increased costs chiefly in trades concerned, not with production, but with the rendering of services, and, in the case of manufactures, in trades in which the state of demand has not permitted total output to be increased by the adoption of the shift system. Even in the services, however, it has sometimes—on the railways, for example—been found possible to make large economies in the use of labour, and by this means to counteract the rise in costs resulting from a shorter working day or week.

Wages and hours are, of course, closely associated; the employers' ability to pay wages being in practice conditioned by the number of hours for which he is able to keep his labourers at work, and also by the extent to which, especially in certain highly mechanized trades, he is able to spread his capital costs over a larger volume of output by means of the shift system.

The movement for the 40-hour week as a means of reducing unemployment received a considerable impetus during the world slump, and was taken up actively by the International Labour Organization. In face of the opposition of most of the employers' groups and of some Governments (including the British), an International Draft Convention laying down the principle of the 40-hour week was adopted by the I.L.O. in 1935; but this still remains unratified by any important State. Subsequently, more detailed conventions have been adopted, applying the 40-hour week to particular industries, and also proposing the reduction of hours to less than 48, but more than 40, in a number of other industries. But these also remain for the most part unratified by the States concerned. The British Government, despite trade union demands for a general 40-hour working week, has taken up the attitude that the question should be dealt with by separate negotiation between the employers and workers in each industry and not by general legislation.

Closely connected with the movement for a shorter working week is the demand for the general adoption of "holidays with pay." A draft convention providing for this reform was adopted by the I.L.O. in 1936, but has not been ratified so far by any country. But France, Belgium, and Norway passed in 1936 acts establishing the system on a compulsory basis; and the general enforcement of payment for holidays has been under consideration in a number of countries. There is provision for the system in both Germany and Italy; and in the U.S.S.R. it ranks as one of the "fundamental rights" laid down in the new Constitution of 1937. In other countries many collective agreements include the right to paid holidays, and there has been a considerable extension of the system during 1937. In Great Britain a bill for the compulsory establishment of paid holidays was carried by the House of Commons on second reading; and the Government thereupon set up a Committee to investigate the matter with a view to possible legislation. It was estimated officially in Great Britain that in 1936 about 1,500,000 wage-earners, as distinct from salaried employees, were already entitled to paid holidays under agree-



ment, the provision varying from 3 to 12 days, after from 6 to 12 months of continuous employment. Since then a large number of additional firms have conceded paid holidays in some form.

Undoubtedly the demand for "holidays with pay," which has been actively taken up by the Labour party, arouses general enthusiasm among the workers; and it seems fairly certain that payment for holidays will before long become a statutory right in Great Britain and most other industrial countries. (*See also LABOUR.*) (G. D. H. C.)

**Wake Island**, a possession of the United States of America, lies in mid-Pacific in lat.  $19^{\circ} 15' N.$ , long.  $166^{\circ} 38' 15'' E.$  It is about 2,130 miles W. of the Island of Hawaii and 1,290 miles N.E. of the Island of Guam. It has no native or permanent inhabitants and is a typical coral atoll of three small islets enclosing a shallow lagoon; total land area about 2,600 acres, much of which is from ten to fifteen feet above sea level.

The island was discovered by the British in 1796. Captain Wilkes, U.S. Navy, explored it in 1841 and Captain E. D. Taussig, U.S. Navy, in the "U.S.S. Bennington," took possession in the name of the United States in 1899. It is under the control and jurisdiction of the Navy Department, which has granted Pan-American Airways of the United States permission to establish and maintain temporary facilities on the island in connection with the commercial trans-Pacific flight operations of that company.

The island is non-productive and there are no commercial interests except those of the Pan-American Company. There are neither pandanus nor coco-nuts, but the higher parts of the land are densely wooded with shrub growing to a height of fifteen feet or more, and some of the tidal flats are covered with mangroves. There is no trace of igneous rock, the entire land being coral formations and sand. It is the nesting place of innumerable birds, including albatrosses, frigate birds, terns, boatswain birds and snipe, all of which are protected. (O. M. H.)

**Wales**, principality forming part of Great Britain, to the west of England and north of the Bristol channel, consisting of 12 counties, to which for administrative and statistical purposes Monmouthshire is usually added; governed as an integral part of the United Kingdom, it sends 36 members to the British Parliament. Capital, Cardiff.

**Area and Population.**—Area (including Monmouthshire); 8,016 square miles. Population (census 1931); 2,593,014 (density 323 per square mile). The leading cities are Cardiff, population (1931) 223,589; Swansea (164,797); Rhondda (urban district) (141,346). The language is English; but in 1931, 77,932 persons spoke Welsh only; 811,329 (31%) spoke both languages.

**History.**—There were no by-elections during the year, but a vacancy was created in the Pontypridd division of Glamorgan-shire by the death, on Nov. 25 of Mr. D. L. Davies (Lab.). On Jan. 19 three leaders of the Welsh Nationalist party, which seeks Dominion status for Wales, were convicted and imprisoned for setting fire, in the previous September, to an aerodrome at Penrhos, the erection of which they considered contrary to Welsh national interests.

**Education and Religion.**—(*See GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF.*) The University of Wales, with colleges at Aberystwyth, Bangor, Cardiff, and Swansea, has some 360 professors, lecturers, etc., and about 3,200 students. The (Protestant Episcopal) Church of England in Wales was disestablished 1920, and reorganized as a separate archbishopric. It has 194,000 communicants. The Calvinistic Methodist (181,000 members) and Congregational Churches are the largest non-episcopal bodies.

**Walking.** In the walking world, the year 1937 has been distinguished by the breaking of every officially recognized world's record at metric distances from 3,000 to 25,000 metres. The outstanding walker has been J. Mikaelsson, Sweden, who made six new metric records and still holds five of them. He is 22 years of age, and made his first record by walking 5,000 metres in 21mins. 49 seconds. He then won the English 7mi. title in 50mins. 19.2secs., and followed that new mileage record up with further records of 3,000 metres in 12mins. 53.8secs.; 10,000 metres in 44mins. 8secs.; 15,000 metres in 1hr. 8mins. 37secs.; 20,000 metres in 1hr. 31mins. 47secs.; and 25,000 metres in 1hr. 57mins. 31.6 seconds.

Mikaelsson did not go through the season without suffering a defeat, and his 10,000 metres record has been eclipsed by Bruun, Germany, walking the distance in 43mins. 25.2secs., and Rundoif, Germany, 43mins. 54.6 seconds. Best performances, not constituting world's records, at other metric distances this year have been: 30,000 metres, Bleiweiss, Germany, 2hrs. 30mins. 46secs.; 50,000 metres, Segerstroem, Sweden, 4hrs. 31mins. 12secs.; 67,000 metres, Malmquist, Denmark, 7hrs. 5mins. 24secs.; 80,000 metres, Champion, France, 8hrs. 31mins. 47secs.; and 12,569 metres in 1hr. by Schwab, Switzerland.

Fifty thousand metres (31mi. 121yds.) is the official distance of the walking championship at the Olympic Games, which title was won in 1936 by H. Whitlock, Great Britain, in 4hrs. 30mins. 41.4secs., which is 30.6secs. faster than the time returned by Segerstroem. Whitlock walked 50,000 metres only once in 1937, when he won the R.W.A. title very easily. His time was 4hrs. 38mins. 43secs., which placed him fifth in the 1937 world rankings. But his record time for this distance was beaten on October 3 by the Alsatian, Sibert, who, during a walk from Dijon to Beaune, covered 50 kilometres in 4hrs. 24mins. 54 seconds.

(F. A. M. W.)

**Walls:** *see* INTERIOR DECORATION: *Walls.*

**War, Department of:** *see* GOVERNMENT DEPARTMENTS AND BUREAUS.

**War, Munitions of:** *see* MUNITIONS OF WAR.

**Warburg, Felix M.** (1871–1937), American financier and philanthropist, was born of German Jewish parents in Hamburg, Jan. 14, 1871. Coming to the United States in 1894, he joined the banking firm of Kuhn, Loeb and Company, of which he ultimately became senior partner. He was naturalized in 1900 and in the years following became increasingly active in the field of social service. Among his interests were the Henry Street Settlement, the Playground Association, the Children's Courts, the Babies' Hospital, the Neurological Institute, the Loeb Home for Convalescents, the American Museum of Natural History, and the New York Association for the Blind. In the educational field, he served as a New York board of education commissioner and as a trustee of Teachers college as well as contributing generously to organizations devoted to Jewish education. He was especially interested in Jewish social work, being head of the federation for support of Jewish philanthropies established in 1917 and championing co-operation between agencies of varied faiths. While not a Zionist, he worked for a better understanding between Great Britain, Arabs and Jews and hoped Palestine might prove a Jewish cultural centre and a refuge for oppressed people of every race. Always interested in art and music, he was an active supporter of such projects as the Fogg Art Museum of Harvard university, the Museum of Science and Industry of New York city, the New York stadium concerts, the Institute of Musical Art, and the New York Philharmonic Society. He died in New York city, Oct. 20, 1937.



**War Debts.** At the end of the World War, twenty nations owed the United States \$10,338,323,597.20. Funding agreements with thirteen countries were reached during the years between 1923 and 1926 setting their debt with interest to that date at \$11,521,654,006 payable with interest charges over a period of 62 years. Of the others Cuba and Liberia paid their debts; no agreement was ever reached with Armenia, Greece, Nicaragua and Russia, and the Austrian debt was set at a flat \$34,159,106 payable in 1943. Payments were made under these agreements until 1931, since which time full payments have been made only by Finland and token payments made for a time by a few others were not continued.

There was no important development in war debt payments during 1937. Both Great Britain and France expressed interest in a new settlement in hope of reducing their obligations. The danger of neglecting payments was revealed in February when participation in a French loan in the U.S. was prevented by the Johnson Act of 1934 prohibiting the financing of government issues of any country whose debt payments were in default. Only Finland maintained her 1937 payments, Hungary making a partial payment (\$9,828 of \$88,651) in December in hope of securing a refunding. The status of the accounts with the thirteen nations whose debts are funded is shown by the following table as of Jan. 1, 1938:

Country	Amount Originally Owed	Amount as Funded	Total Default, Dec. 15, 1937
Belgium . . . . .	\$ 370,087,200.43	\$ 417,780,000	\$ 61,300,084
Czechoslovakia . . . . .	91,870,671.03	115,000,000	16,315,400
Estonia . . . . .	13,999,145.60	13,830,000	4,160,287
Finland . . . . .	8,281,920.17	9,000,000	
France . . . . .	3,404,818,945.01	4,025,000,000	455,000,163
Great Britain . . . . .	4,277,000,000.00	4,600,000,000	994,486,367
Hungary . . . . .	1,685,835.61	1,939,000	467,673
Italy . . . . .	1,648,034,050.90	2,042,000,000	84,119,757
Latvia . . . . .	5,132,287.14	5,775,000	1,607,298
Lithuania . . . . .	4,981,628.03	6,030,000	1,358,227
Poland . . . . .	159,666,972.39	178,500,000	51,766,147
Rumania . . . . .	37,922,675.42	44,500,000	7,438,750
Yugoslavia . . . . .	51,758,480.55	62,850,000	1,913,515

**Warfare.** For nearly a century the trend of the technical conditions of warfare has given a growing advantage to the defence, and has tended to discount a superiority of numbers on the part of the attacker. This advantage of the defence was created by the introduction of the breech-loading rifle, which enabled the firer to remain under cover while those who sought to attack him had to expose themselves in advancing. It became still more marked when the magazine rifle increased the rate of fire, and was intensified with the advent of the machine-gun. The defensive thereby became supreme, buttressed by trenches and barbed-wire entanglements. The effect has been to make decisive results in war far more difficult to attain, save against forces which lack modern equipment, and to reduce the chances of successful invasion.

Unless a decisive advantage is gained in a short time, deadlock is likely to develop earlier than ever, and to be established more firmly—unless the endurance of the defender be undermined by internal disturbance or shortage of supplies.

In so far as these conditions become recognized, they should tend to be a check on war. At present they have only been recognized far enough to make would-be aggressors more conscious of the importance of hastening their stroke and seeking an initial surprise. The creed and organization of the totalitarian state facilitates this purpose, if they also carry with them a tendency to mass effects which runs counter to the increasingly qualitative trend of warfare.

To its devotees, the totalitarian principle demands that in war a nation should place everything at its service; and, in peace, at the service of the next war. This picture of the way that a totalitarian war will be waged has been shown in many recent writings,

among which Ludendorff's *The Nation at War* is perhaps the best known abroad. Action should open without a declaration of war—in case the people of the nation which declares war should feel any guilty sense of being the aggressors. Within a few hours of the decision to make war the air, land, and sea striking forces must reach their full war readiness. The rest of the air and naval forces will complete their mobilization by the second day; and the rest of the land forces, a few days later. Hostilities will have already begun with the despatch of the mechanized divisions near the frontier to force an entry into the enemy country. On the seas the surface and submarine attack on the enemy's commerce will coincide with this opening stroke. The main land advance may begin a little later, because of the masses that will have to be brought up, and these will have to come by rail, since motors will be inadequate to carry the numbers. But by the end of the second week of war operations will be in full progress everywhere. Battle will follow till the enemy is finally crushed, or till reserves of men and material run out. The air force must first be used to help in beating the opposing army; only then will the army be able to act with its air force against the enemy country in rear. For this school, the land battle is still a process in which the infantry is helped forward by artillery, machine-guns, mortar and tank support, until it overwhelms the enemy in a man-to-man fight. Furthermore, "attack is always the deciding factor in battles." All movements should lead to battle; mechanization simply quickens its delivery.

This emphasis on battle is not due to any moral objection to striking direct against the enemy people—to quote Ludendorff again, "the demands of totalitarian warfare . . . will ever ignore the cheap theoretical desire to abolish unrestricted U-boat warfare." And aircraft will now combine with submarines in sinking every vessel which tries to reach the enemy's ports, even vessels sailing under neutral flags. Likewise on land a time will come "when bombing squadrons must inexorably and without pity be sent against the people in the enemy country."

But on military grounds, which are the ruling considerations, that time should normally be delayed until the battles have been won. Ludendorff declares that technical means are becoming ever more important, yet clings to the old belief that strength lies in numbers—"it is a fact that victory 'goes to the big battalions.'" Hence "the totalitarian war demands the incorporation in the army of every man fit to bear arms." It is clear that the faith of the totalitarian militarists is built on traditional military theory.

It is worth while to approach the problem of future warfare along this path, because it is a guide to the outlook which still prevails in the war ministries of Europe. The general trend of the rearmament race now in progress fosters it by piling up numbers, and by feeding the military chiefs with more means than their minds can assimilate.

Mechanization has given the general staffs a new ground for belief in mobile warfare—the picture to which armies always revert in peacetime. Despite the resistance which they everywhere offered to the idea of mechanization, now that they have embraced it, they build expectations on it which dumbfound a sober, and more long-standing, advocate of this development. In many countries they have burst out into prophecy that trench-warfare is a thing of the past, and that the wars of the future will be fought and finished with a quickness hitherto unknown.

There is little doubt that the new mechanized divisions will be used in the first hours of war with the aim of penetrating the enemy's frontier and opening the way for the subsequent general advance. All the general staffs are trending towards this new picture. They no longer think of waiting, as in 1914, until the main strength of the armies has been assembled. But there is reason to doubt whether this mechanized spearhead will produce the



decisive advantage which is sought. For obstruction is the natural antidote to the power of delivering mobile strokes which mechanization has revived. By utilizing rivers, canals, and railways as barriers, by demolishing bridges and blocking defiles, the defender may go far to nullify the new menace. Moreover, mechanization itself enables the means of obstruction to be moved more swiftly to any threatened spot. Despite the apparent advantage that mechanization has brought to the offensive, its reinforcement of the defensive is likely to prove greater still.

The prospects of this initial stroke by the mechanized forces are bright compared with those that await the main masses of the European armies. There is little ground for expecting that these will make more impression on the defence than in the last war. The main weapon that then stopped them was the machine-gun; there is now a far higher proportion of machine-guns, light and heavy, in all armies. The weapon on which the attackers mainly relied to overcome the defending machine-gun in the last war was artillery; at the outset of another, no army could expect to have the same amount of artillery as in 1918. Even if this could eventually be increased to the former scale, it is a weapon that, when used in mass, tends to block the path of the infantry it is trying to help. By ploughing up the ground, it acts as an automatic military brake. Armour, in the form of the tank, proved a better means in the last war of helping the attack forward; but armour used in direct assault against organized defence would now seem to have lost much of its value through the great and widespread development of armour-piercing weapons—there are now highly efficient anti-tank machine-guns, and even rifles, as well as guns. There are greater possibilities in the skillful use of obscurity as a cloak to the attack. Fog, natural or artificial, and darkness are the best antidotes to the defensive machine-gun. But the level of training required for effective operations in obscurity is difficult to attain during peacetime in mass armies raised by conscription. Moreover, the defence may find adequate means of turning darkness into daylight, and of dispersing fog or smoke.

A greater question that affects these mass armies is whether they will ever reach the battlefield. Their approach must be made by roads and railways; they will crowd these arteries which now, for several hundred miles back, lie under the menace of air attack. Their immense demands in food and ammunition supply requires a continuous circulation along these arteries; thus the strain is maintained all the way back even when the armies themselves have passed on. To gauge what might happen, it is worth studying the process of mobilization and assembly in 1914. Despite all the care devoted to its machinery, there were hitches which caused serious trouble, and threatened worse. Yet in 1914 there was no interference from the enemy such as is certain today through the intervention of air power. The complexity and delicacy of the process of mobilizing and moving forward an army is such that a mere touch may well suffice to cause its collapse. The larger the army the more susceptible it will be to dislocation—because the greater will be the congestion of all the traffic arteries.

If the opponent should employ mustard gas, the paralysis of war is still more probable. For in the fighting zone mustard gas is most effective as a defensive blocking agent. It forms the most impassable, if invisible, barrier to advance, especially advance by armies composed of infantry; while in the rear zone it is essentially a dislocating agent. But mustard gas is not necessary to produce this stagnation. Machine-guns and demolitions should suffice to stop an advancing army; air bombs acting on inherent congestion behind should suffice to prevent it remaining where it has stopped. Blocked in front, the mass army is likely to break down in rear. If the maintenance of such armies is straining the resources of the nations in peace, in war the attempt

to use them threatens national bankruptcy.

The attempt to seek victory in battle at sea has hardly more promise. There is no need to assume that the battle fleets will be bombed to destruction. The battle fleets of the last war were deterred from meeting each other by the menace of the submarine and the mine; such a paralysing effect would seem more likely than ever now that to these weapons is added the new threat of shore-based aircraft, and torpedo-carrying speedboats. It is worth notice that almost all the naval battles of history have been fought within present-day air range from a coastline. By contrast, these new agents—which can all be classified as “light craft”—promise to increase their potentialities of direct attack on sea communications, avoiding battle. Such guerrilla war at sea bulks large on the horizon of future war. It affects, not only the possibility of transporting large land forces overseas, but that of maintaining the supply of the armies which are there.

In the air, similar conditions prevail. It is difficult to bring the opposing air forces to battle, because the three-dimensional spaces are so vast and speeds so high. It is simpler, far simpler than it has ever been on land, to strike direct at the sources of the enemy's power without first defeating his forces. The complex web of a modern nation's commerce and industry, its administration and supply, offers a target as sensitive as it is large. Externally, the flow of its supplies may be more easily reduced to stagnation now that its trade-routes, and their approaches to port, are threatened by shore-based aircraft and other new agents of interference. One deduction we may draw is that the larger the armies that a country should attempt to send overseas, the more difficulty it will have, not only in maintaining them, but in maintaining itself. A corollary is that the first attention should be given to the reduction of national vulnerability, rather than to the creation of armies. Every means of diminishing and dispersing targets, and also of decreasing their sensitiveness, should be studied and sought. And the mental preparedness of the people is as important as the provision of material defences.

The positive forms of defence involve questions to which the answer is less sure. The power of evasion possessed by aircraft, and increased by their increasing speed, has been a justification for the view that in the air, as contrasted with the land, the attack was superior to the defence where it was aimed directly at ground targets. This view was defined in Mr. Baldwin's famous phrase—“The truth is that a bomber will always get through.” The result has been that the nations, whether their intentions were aggressive or purely self-protective, have tended to place their main reliance in large bombing forces. A country attacked would thus be ready to respond with an immediate counter-offensive, directed, not against the enemy's air forces, but against targets in his territory.

But recent experiences in Spain and China, while confirming the aircraft's power of evasion, has suggested that its destructive effect has been overestimated, at least where there is sufficient opposition to prevent an undisturbed approach and aim. While anti-aircraft artillery may not have scored a very much higher proportion of hits than in the last war, it has shown its value in preventing the bombers achieving the hits they intended. Aircraft used defensively for interception have had varying success, but sufficient on the whole to emphasize the question how far the value of bombing attacks balances their risks wherever the defence is proportionately strong. It would seem clear that, although defence is not yet master of attack in the air, the deterrent influence of its presence is far more powerful than its actual effect, while the effect attained by the attack decreases disproportionately with the multiplication of defensive means. (See also *CHEMICAL WARFARE; MUNITIONS OF WAR; PACIFISM; WORLD ARMAMENTS.*)

(B. H. L. H.)



**Warsaw**, province and capital city of Poland. The city, 315 miles E. of Berlin, on the W. bank of the Vistula, connected by four bridges (two railway) with Praga, its eastern suburb, is mainly modern and spacious.

**Area:** 47 sq.mi.; population (1931): 1,178,914 (833,500 Polish-speaking)—1937 estimate: 1,225,451.

It is the seat of a Roman Catholic archbishop and the metropolitan of the autocephalous church, a centre of thriving manufactures, of commerce (exporting corn and flax), and of education; the Don university had (1935-36) 9,050 students, the free university and academies, 4,494. There are two main railway stations (and two in Praga), an airport and broadcasting stations. The removal (June), by administrative order, of Pilsudski's coffin from St. Leonard's crypt to another vault in the cathedral caused controversy, afterwards reconciled. (H. Fw.)

**Washington**, a State in the extreme North-west United States, popularly known as "The Evergreen State." Area, 66,836 sq.mi.; population (U.S. census 1930) 1,563,396; estimate (July 1, 1937) 1,658,000. Capital, Olympia, 11,733; three largest cities: Seattle, 365,583; Spokane, 115,514; and Tacoma, 106,817. In 1930, the urban population was 884,539 or 56.6%. Native born whites dominate population percentages with 81.7%; of the 244,256 foreign born whites, Canada, Sweden, Norway, Germany, and England furnished over one-half. Negroes numbered 6,840; Japanese, 17,837; Chinese, 2,195; Filipinos, 3,480; Indians (Jan. 1, 1937), 13,098.

**History.**—The legislature met in its 25th session from Jan. 11 to March 11, 1937. The social security system was placed under a department, administered under the merit system, and was made conformable to Federal law. A maximum of 60 hours per week was prescribed for domestic labour, significant in view of the decision by the U.S. Supreme Court sustaining the Washington minimum wage law. A State teachers' retirement system was substituted for the old arrangement of local funds. Looking toward notable expositions and the semi-centennial for statehood (1939), a progress commission was voted \$250,000.

Public works under construction are the Grand Coulee dam (see DAMS) and the Roza irrigation project in central Washington which will reclaim 72,000 acres. Though comparatively quiet, the labour front reflected current trends. The C.I.O.-American Federation of Labor rivalry appeared in the strike on the *Seattle Star*; while Spokane saw the emergence of the closed shop issue in a laundry strike which failed after it had tied up the industry for two months and also witnessed a sit-down demonstration of W.P.A. workers.

The chief State officers are: Clarence D. Martin, governor; Victor A. Meyers, lieutenant-governor; Ernest N. Hutchinson, secretary of State; Cliff Yelle, State auditor; Phil H. Gallagher, State treasurer; G. W. Hamilton, attorney general; A. C. Martin, commissioner of public lands; William A. Sullivan, insurance commissioner; Stanley F. Atwood, superintendent of public instruction; Edward J. Reilly, speaker of the assembly; and William J. Steinert, chief justice.

Other members of the State Supreme Court are: John F. Main, John S. Robinson, George B. Simpson (appointed by governor to succeed Warren Tolman, resigned), O. R. Holcomb, Walter B. Beals, William J. Millard, Bruce Blake, James M. Geraghty.

**Education.**—The system of higher education includes a university, a State college, and three colleges of education. During the school year 1935-36, average daily attendance in elementary and secondary schools was 275,929, and the number of teachers employed therein, 11,401. Total expense for this instruction was \$27,026,735.23 and the cost per pupil in daily attendance \$84.56. Teachers' salaries averaged \$1,377.49. Training schools for boys



CLARENCE D. MARTIN, governor of Washington, acted as engineer on the first train over the new Grand Coulee Dam railroad

and girls are at Chehalis and Centralia respectively; schools for the blind and deaf, at Vancouver; one custodial school, at Medical Lake; and a new one in Western Washington. Recent legislation provides special State subsidies for training under-privileged children.

**Charities and Corrections.**—The State maintains four hospitals at Steilacoom, Sedro-Wooley, Medical Lake, and Soap Lake (the latter for the treatment of Buerger's disease); a Veterans' home at Retzil; a Soldiers' home at Orting; and a penitentiary at Walla Walla; and a reformatory at Monroe.

**Banking and Finance.**—Gross revenues for the biennium ending Sept. 30, 1936 were \$132,283,484.40 and the cash balance of the previous biennium \$11,939,443.90. The gas tax contributed \$28,344,111.91 and the sales tax (from April 1, 1935-March 31, 1936) \$14,964,825.31.

Total disbursements amounted to \$126,311,489.12; the cash balance was, therefore, \$17,911,439.18. The bonded debt is \$14,588,000. One hundred and eighty-five banks showed a total capital of \$29,594,000; capital surpluses and undivided profits of \$47,219,000; deposits of \$469,220,000; and resources totalling \$521,237,000 on June 30, 1936.

**Agriculture and Manufacturing.**—Agriculture, the leading industry, showed uniform gains in 1937.

Leading crops	Value 1936	Av. Prod. 1928-32	Prod. 1936 bu.	Prod. 1937 bu.
Wheat . . . . .	\$30,264,000	42,798,000 bu.	46,193,000	48,703,000
Apples . . . . .	22,291,000	33,768,000 bu.	28,000,000	30,340,000
Hay (wild & tame) .	18,286,000	1,592,000 tons	1,801,000	1,804,000
Potatoes . . . . .	8,811,000	8,047,000 bu.	8,010,000	9,400,000
Oats . . . . .	4,003,000	7,513,000 bu.	8,517,000	8,060,000
Pears . . . . .	3,510,000	3,921,000 bu.	5,400,000	5,594,000

Timber, ranking second as wealth producer, furnishes material for Washington's leading manufactured products; saw lumber, shingles, veneer and plywoods. Salmon and halibut still dominate another industry, fishing, in which Washington outranks other States. Rising in importance are large oysters, successfully transplanted from Japan, and pilchard, small fish akin to salmon, which are reduced to oil and a protein meal for chick-feed. Though ranking low in total value of minerals produced, Washington lists such scarce items as magnesite, tungsten, molybdenum, and chromium. During 1935, 2,865 manufacturing concerns produced goods valued at \$478,385,098. To develop these resources, the State possesses 19% of the nation's hydro-electric power.

(H. J. DE.)

**Washington**, District of Columbia, U.S., according to the Bureau of the Census, had a population of 627,000 on July 1, 1937, an increase of nearly 30% since 1930. This has been due in part, no doubt, to the expansion of Federal activities; but also, quite certainly, to the public and private im-



provements in the nation's capital and the amenities for pleasant and comfortable living thereby created.

**Planning.**—With the creation of the National Capital Park and Planning Commission in 1926 and the inauguration of a comprehensive public building program, a very real transformation in the Federal city has taken place. A notable contribution to supplement the regional plan was the publication in 1937 of the Report on the Baltimore-Washington-Annapolis Region. These three cities, once separated by thirty or forty miles of forests and rural clearings, are now part of an expanding urban and suburban region. The plans, when realized, will give adequate parkway and highway approaches to the nation's capital.

**Projects Under the Plan.**—The regional plan for Washington is slowly being realized. The much-travelled Mount Vernon Memorial highway to the home of George Washington will shortly be extended from the Arlington Memorial bridge to the Key bridge. This and the Leiter property, acquired by gift, comprising 167 acres and a mile and a half of shore front, are parts of the George Washington Memorial parkway which will include both sides of the Potomac river from Mount Vernon to Great Falls. Within the District of Columbia, it is now possible to drive through a parkway along the Potomac river and Rock Creek park from Haines Point to the District line, a distance of more than ten miles. The recently completed Piney Branch parkway adds to the park drives and the extension of the Rock Creek parkway into Maryland serves both the District and Maryland. With emergency funds, many of the parks of Washington have been rehabilitated and replanted. Meridian park on Sixteenth street has finally been completed. With Civilian Conservation Corps labour Fort Du Pont park, located on the partly completed Fort drive-way which will one day traverse the hills surrounding the city to connect the old Civil War forts, has made accessible a large area of picturesque native scenery. The Civilian Conservation Corps labour has made possible the planting and restoration to its natural state of Roosevelt island, lying in the Potomac river between the Arlington and Key bridges, as a fitting memorial to Theodore Roosevelt.

**Public Buildings.**—The Apex building, to be occupied by the Federal Trade Commission, designed by Bennett, Parsons and Frost, the Archives building and the National Gallery of Art, designed by John Russell Pope, will complete the Capitol end of the famous triangle of public buildings. The harmonious effect of planning the entire triangle as a unit is already apparent in the handsome buildings which line Pennsylvania avenue, Fifteenth street and Constitution avenue. In 1937, the new Department of Interior Building, designed by Waddy B. Wood, was completed and occupied. It lies across the parkway south of the old Interior building, and faces Constitution avenue, where the new Federal Reserve building, designed by Paul Cret, lines up with the National Academy of Sciences, designed by the late Bertram Goodhue, the Public Health building, designed by J. H. de Sibour, and several smaller structures to create an impressive avenue of buildings. In the Capitol group, the new Supreme Court, a new House office building and an extension to the Senate office building are occupied. The Library of Congress Annex, designed by Pierson & Wilson, is nearing completion. In the District Civic Center, the Police Court building, designed by Nathan C. Wyeth, has been erected.

**Art.**—The gift of the art treasures collected by Andrew Mellon, to be housed in a gallery, also donated by Mr. Mellon, places in Federal ownership a valuable art collection. A number of large murals by Barry Faulkner, Eugene Savage, Rockwell Kent, and others, are being placed in the new public buildings. An equestrian statue of General Artemas Ward, designed by Leonard Crunelle, the gift of Harvard university, is being placed in the

circle at Massachusetts and Nebraska avenues.

**Housing.**—The Public Works Administration built Langston Terrace, a project for coloured people, overlooking Anacostia parkway, near Benning road. Four large-scale housing projects, erected under the Federal Housing Administration's plan to aid private enterprise, are located in the Washington region, Colonial Village and Buckingham in nearby Virginia, Falkland, just north of the District line in Maryland, and Brentwood in the north-east section of the District. One of the four Greenbelt towns is located six miles from Washington, and is now being operated by the Farm Security Administration. The Alley Dwelling Authority is proceeding with its task of ridding the national capital of its two hundred inhabited alleys.

Two rehousing projects have been completed and two more are under construction. (H. Js.)

**Water Power.** The year 1937 witnessed the advent of no important new power sources nor of new means for power conversion. The fuels—coal, oil, and natural gas—together with falling water, continue to furnish the great bulk of power for all purposes. The means of utilizing the power of rivers are unaltered and the development of hydraulic turbines has continued along conventional lines.

Estimates of the amount of developed water power in the world indicate that the total was about 62,000,000 horsepower of installed water wheels as of 1936, which appears to have been increased to 63,000,000 or more by the close of 1937. The latest estimates of the total potential water power of the world, based on ordinary minimum flow and 100% efficiency, indicate a total of about 670,000,000 horsepower. However, in comparing these figures with those for developed power, it should be recognized that the estimates of developed capacity are based on installations of water wheels, which average two or three times the potential low-flow power at the sites of utilization.

Although there were many important water-power plants under construction, there were relatively few plants completed and put in operation in 1937.

Those reported as completed or under construction and their capacities in horsepower are:

**Austria.**—Construction was resumed at Persenbeug on the Danube river, 134,000.

**Canada.**—Of the plants completed, 167,000, the Outardes river in Quebec and the Montreal river in Ontario afforded 80,000. There were plants under construction or extensions of old plants, 50,000.

**Ceylon.**—The Ceylon Government authorized the construction of the Aberdeen Saxapana hydroelectric plant, 33,500.

**France.**—The Chambon dam was completed, increasing the annual water-power output at plants on the river below by 110,000,000 kilowatt-hours.

**Germany.**—Construction of a dam and power plant on the Elbe river at Hohenwarte was in progress.

**Great Britain.**—The Galloway Power scheme was completed with total capacity of 150,000 horsepower at five plants. Installations at the head of Loch Linnhe, Inverness, Scotland, are being increased by 50,000.

**Iceland.**—A power plant at Ljosafoss falls on the Sag river, 12,500, was put in operation.

**India.**—A plant was completed at the Mettur dam on the Cauvery river, 48,000. Construction was started on a plant on the Shimsha river, 27,000.

**Irish Free State.**—A power plant on the Liffey river at Pollaphuca, County Wicklow, was under construction.

**Japan.**—A power plant was under construction on the Shinano river in Niigata Prefecture, 300,000.



**New Zealand.**—Two units, 42,000, were added to the Arapuni plant making the total capacity 126,000.

**Poland.**—Three power plants were under construction: Duna-jec river, 13,400; Sola river, 26,400; and San river, 40,000.

**Sweden.**—A power plant was completed on the Indalsälven river at Krångede, 241,000.

A power plant on the Skellefte-Alf river was enlarged by 13,400 horsepower.

**Switzerland.**—Three plants were under construction, Bargis, 35,000; Trinsermähle, 40,000; and Isla Pin, 15,000.

**Union of Soviet Socialist Republics.**—A program of construction of 20 plants was announced in 1935, scheduled for completion: in 1936, seven plants, 233,000; in 1937, four plants, 336,000; in 1938, five plants, 381,000; in 1939, three plants, 493,000; and in 1940, one plant on the Kama river near Perm, 423,000.

No progress report is available with relation to this schedule. The plant near Perm and two plants on the upper Volga—at Rybinsk and at Uglich—total for the three plants 1,270,000 horsepower, were under construction. The Dnieper plant after five years of service is to be enlarged next year to 750,000 horsepower by the addition of 170,000 horsepower. A power plant is being installed at Stalinogorsk, 134,000.

**United States.**—The increase, 365,000, in completed water-power plants was divided between new plants, 243,000, and additional units, 122,000. The larger of the new plants are, Bonneville, 120,000, on the Columbia river in Washington; Sutherland, 33,500, on the North and South Forks of the Platte river in Nebraska; Buchanan and Inks dams, 45,000, on the Colorado river in Texas; and the Upper Salmon development, 26,000, on the Snake river in Idaho. A new unit, 115,000, was added at Boulder dam, on the Colorado river, increasing the capacity there to 515,000. Construction was in progress at Fowler Bend dam, initial 80,000, ultimate 160,000, on Hiwassee river; at three plants on the Tennessee river: Guntersville, initial 102,000, ultimate 136,000; Chickamauga, initial 108,000, ultimate 144,000; and Pickwick Landing, initial 96,000, ultimate 288,000; at two dams on the Columbia river: Bonneville in Oregon, initial 120,000, ultimate 600,000; and Grand Coulee in Washington, ultimate 2,700,000; at Fort Peck on the Missouri river, initial 94,000, ultimate 141,000; on the Flathead river in Montana, initial, 77,000, ultimate 154,000; at Boulder dam on the Colorado river in Arizona and Nevada, present installation 515,000, ultimate 1,835,000; at Parker dam on the Colorado river, ultimate 100,000; at Shasta dam on the Sacramento river in California, initial 375,000; ultimate 470,000; at Marshall Ford dam on the Colorado river of Texas, initial 45,600, ultimate 68,300; at Elephant Butte dam on the Rio Grande, ultimate 26,000; at the Tri-county development on the Platte river in Nebraska, ultimate 70,000. The total ultimate capacities of these plants is about 6,900,000 horsepower, compared with 17,120,000 horsepower, the total developed water power in the United States as of Jan. 1, 1937.

**Uruguay.**—Contract has been let for a large plant on the Rio Negro, scheduled for completion in 1942. (N. C. G.)

**Waziristan.** Turbulence continued during 1937 in this difficult tract on the N.W. frontier of India; and a large force of British and Indian troops, including 5,000 irregulars, was kept busy coping with the guerrilla tactics of the tribes. The establishment of a powerful cantonment at Razmak was followed by an extension of the protected tribal areas beyond the Tochi valley, and 100 additional miles of road are being constructed. The position was quieter towards the end of the year, as a faqir of Ipi, who had been active in the attacks on the Indian forces, had been driven out of the Shaktu valley.

## Wealth and Income, Distribution of.

Distribution of wealth continued to be a major problem in the United States during 1937. The Federal Government had for years made distribution a major goal in hope of increasing purchasing power. Not only was the high rate of taxation on top income brackets maintained in 1937 (a surtax of 72-75% being levied on incomes in excess of \$1,000,000 in addition to the normal 4%), but strong efforts were made through excess profits taxes to force a distribution of corporate income. Farm legislation was urged to balance agricultural with industrial incomes, while President Roosevelt's determination to lower prices without wage reduction was intended to increase purchasing power. Elimination of poor housing and scanty clothing resulting from insufficient income was a major purpose of the administration.

Statistics published by the Brookings Institution in 1934 regarding the income of 27,474,000 United States families in 1929 reveal that 21.47% received under \$1,000 and earned but 3.76% of the \$77,116,000,000 total. Nearly three-fifths of the total families (59.53%) earned under \$2,000 and received less than a quarter of the income (23.64%). Over three-fourths of the families (78.42%) earned under \$3,000 and received only two-fifths of the income. On the other hand, but 24,000 of the families (.088%) earned \$8,753,000,000 or 11.35% of the income. Denials that high incomes decrease purchasing power are without foundation. Stuart Chase shows in *The Economy of Abundance* that while men earning over \$1,000,000 spend but 7.7% of their income and those receiving over \$50,000 but under \$1,000,000 spend but 48.1%, those earning from \$2,000 to \$5,000 spend 86.7% and those under \$2,000 as much as 94.1%. While income tax statistics do not present a complete picture of actual income and do not include the small incomes, the following figures for net income in 1933 show the number of individuals in each class:

Class	Number
Over \$1,000,000 . . . . .	50
\$500,000 to \$1,000,000 . . . . .	81
\$300,000 to \$500,000 . . . . .	141
\$150,000 to \$300,000 . . . . .	695
\$100,000 to \$150,000 . . . . .	1,084
\$50,000 to \$100,000 . . . . .	6,021
\$25,000 to \$50,000 . . . . .	18,423
\$10,000 to \$25,000 . . . . .	75,043
\$5,000 to \$10,000 . . . . .	229,754
\$3,000 to \$5,000 . . . . .	599,075
\$2,000 to \$3,000 . . . . .	914,198
\$1,000 to \$2,000 . . . . .	1,480,717

The latest figures regarding income distribution according to type of income are for 1937 when compensation for employees totalled \$44,983,000,000; dividends and interest, \$9,293,000,000; and entrepreneurial withdrawals, rent and royalties, \$13,187,000,000. Of employee payments \$15,825,000,000 was from manufacturing, mining and construction; \$4,845,000,000, from transportation and public utilities; \$7,958,000,000, from trade and finance; \$14,494,000,000 from Government service; and \$1,800,000,000 from work relief. Total income for 1937 (\$67,463,000,000) was at an index of 86.2 (1929=100) as compared with 79.8 for 1936. (X.)

**Great Britain.**—The statement is often made that the rich are getting richer and the poor poorer, and great emphasis is laid upon the immense contrast between wealth and poverty. Writing in 1920, for Great Britain, Sir Josiah Stamp found that there had in fact been little change in the "slope of distribution" for 100 years (see *Encyclopædia Britannica*, vol. 23, pp. 452-53).

But as regards capital wealth, a recent work (1937) on the change in distribution of capital in Great Britain by Daniels and Campion establishes certain conclusions very clearly. More than



half of the total capital in 1924-30 and 1911-13 was owned by persons with more than £5,000 each. The two lowest capital groups include the majority of the population, the capital included being one-sixth of the total in 1924-30. If estates paying fixed duties are separated from others in the group £100-£1,000 and one-sixth of the value of the remaining estates is added, the amount of capital owned by persons having between £100 and £500 is estimated at £790-£890 millions.

Perhaps a percentage table will bring out the nature of the change more definitely:

Total	1924-30 Percentage of total wealth	1911-13 Percentage of total wealth	Total	1924-30 Cumulative percentage of numbers	1911-13 Cumulative percentage of numbers
£100 or less . . .	3.6-6.1	6.0-11.1	More than £100	21.3-23.7	11.6-13.4
£100-£1,000 . . .	10.4-11.1	10.0-10.4	£1,000 . . .	5.8- 6.4	2.9- 3.3
£1,000-£5,000 . . .	17.0-17.7	15.7-16.0	£5,000 . . .	1.6- 1.8	0.8- 0.9
£5,000-£10,000 . . .	10.0-10.3	9.7-10.0	£10,000 . . .	0.8- 0.9	0.4
£10,000-£25,000 . . .	14.4-14.8	14.0-14.6	£25,000 . . .	0.2- 0.3	0.1
£25,000-£100,000 . . .	18.6-19.1	18.7-19.5	£100,000 . . .	0.04-0.05	0.03
Over £100,000 . . .	23.2-23.8	21.6-22.9			

Such reduction as there has been in the inequality of the distribution of capital since before the World War is due in part to the change in the age distribution of the adult population during the period. The number of persons has increased more in the higher than in the lower age groups, and the inequality of distribution of capital is also somewhat less in the higher than in the lower age groups. Comparison, age group by age group, between 1924-30 and 1911-13, gives further indication that the distribution of capital is less unequal than it was before the War.

More than half the capital of the country is owned by persons over 55, and about three-quarters by persons over 45. After 55 the inequality of distribution does not alter much. Beyond this age, the richer may get richer, but the proportion of those with £100 or less remains at about two-thirds of the total number of such adult persons. The changes in the distribution of income in Great Britain are not similarly available for recent years. But Mr. Colin Clark has made the following computation for 1929:

	Numbers (ooo's)	Income (£s million)
Over £10,000 . . . . .	10	228
£2,000-£10,000 . . . . .	100	388
£1,000-£2,000 . . . . .	195	235
£500-£1,000 . . . . .	481	309
£250-£500 . . . . .	1,249	402
£125-£250 . . . . .	5,827	1,009
Under £125 . . . . .	11,800	1,170
Total . . . . .	19,662	3,741

His comment is: "The inequalities of distribution are very considerable. Speaking of the years 1929 or 1935, we can say that one-tenth of the whole working population, with incomes over £250, took 42% of the whole total of personal incomes, or just under half, if we allow for the fact that the greater part of the non-personal incomes, in the form of undistributed company profits and such, accrued for the benefit of the rich. A small class, comprising 1½% of the population, with 'four-figure incomes' and upwards, took 23% of the whole total of personal incomes."

Recent computations of the German national income give the divisions into industrial classes or sources, but not income groups. In 1913 wages and salaries were 45.3% and from 1929 to 1936 the figure has varied from 55.8 to 58.1%. Trades and professions were 20.1% in 1913, and in 1929 became 15.5%, sinking steadily to 13% in 1935-36. Agriculture accounted in 1913 for 12.5%, and fell to 7.2%, rising to 9.9%. Pensions, which were 3.1% in 1913, became 12% in 1929, 20.6% in 1932, and went back to 12.2% in 1936 (*National Industrial Conference Board*, 1937).

The American figures show that in 1913-17 agriculture accounted for 17.2%, and this sank to 11.7%, in 1923-27, and 8% in 1930. Manufacturing went from 29.8 to 27.4 and 26.3%; service and trade, 33.6, 40.5 and 44.3% respectively; Government, from 5.2 to 7.2 and 9%. By functional sources the movement was: wages and salaries, 57.5, 65.5, and 63.1%; entrepreneurial 32, 26.3 and 24.7%; property move 10.1, 8.2 and 10.2%. The main difficulty in dividing the total national income into income groups is that the direct taxative individual total income returns do not extend below the higher income groups, enjoyed by a mere minority. It has been shown recently that these tend to move differentially on a change in price levels, and the highest groups rise proportionately more than the lower groups. Sir Josiah Stamp recorded that, as the price level rises (not in time, but in magnitude), the percentage which the 25,000th income is of the 10,000th income steadily falls; in other words, the very rich gain relatively in income with a high price level, or lose relatively with a low—their income is more sensitive to the effects of the change.

(J. S.)

**Weather:** see METEOROLOGY.

**Welding:** see COLUMBIUM.

**Welfare Work.** While applied in England only to voluntary improvement of working conditions by industrialists, the term welfare work is more broadly used in the United States to indicate the relief of distress and evil conditions among the poorer classes of the population generally. Until 1933 such work was largely in private hands, but since that time public participation has greatly increased with the Federal Government assuming a large proportion of the expense.

As special aspects of welfare work are treated in separate articles, only a general picture of the activities are needed here. Private relief, treated in the articles on COMMUNITY CHESTS and DONATIONS AND BEQUESTS, began to show a slightly increased ability to assume its former load in 1937. Only the greatly increased burden of relief in recent years rendered private aid entirely inadequate, for community chest contributions which reached a low of 84% of their 1920 level in 1935 returned to 93%. As there were no funds for expanding existing agencies, however, extraordinary demands for aid must continue to be met by public funds.

United States public welfare work during 1937 covered both immediate and prospective relief. Aid to the unemployed by the financing of public works, pensions for the aged, and increased assistance to children, mothers, and the blind were balanced by the expansion of such schemes as unemployment insurance, the insurance of bank deposits and the erection of model villages (see CHILD WELFARE; RELIEF; SOCIAL SECURITY; SOCIAL SERVICE). State Legislation adapting local welfare systems to Federal requirements was general throughout the nation. The extent of Federal participation in welfare work can be seen in the fact that the Public Works Administration aided in the building of 70% of the schools, 62% of the hospitals and 64% of the waterworks constructed in its four year history (1933-37) having spent approximately \$1,099,000,000 for wages and \$1,900,000,000 for materials much of which went for wages, and that appropriations for the Works Progress Administration reached \$8,844,000,000 early in 1938. As the expenditures of State and local governments were also large, there was little indication that public welfare participation would soon be reduced.

**Great Britain.**—The field of agreements covering industrial amenities to workers was dominated during 1937 in Great Britain by the question of paid holidays. The setting up of a committee on this question by the minister of Labour early in the year and



an invitation to all industries to submit evidence have concentrated attention in the movement, which has been singularly uneven in its development since the end of the World War. The committee concluded its public sittings early in Dec. 1937 and is expected to publish its recommendations in the first quarter of 1938. The ministry of labour itself submitted a memorandum to the committee, tracing the development of the movement for annual holidays with pay in Great Britain. This showed that immediately after the War the practice of granting paid holidays spread considerably, and in Aug. 1920 there were close on 60 general and district collective agreements between employers and workpeople for paid holidays. The more important general agreements were those covering the railway service, tramway service, printing and book-binding, boot and shoe manufacture, the non-trading services of local authorities, heavy chemical manufacture, flour-milling, match manufacture, cement manufacture, paint, colour and varnish manufacture, cocoa, chocolate and jam manufacture, and gas works. Among the district agreements were those affecting omnibus workers in London, newspaper printing in London, and the employees of retail co-operative societies and of electricity supply undertakings in certain areas.

By Dec. 1922, the number of district agreements formulated brought the total up to 100. In the next two or three years no important new agreements were announced, and in March 1925 it was estimated that about 1,500,000 manual workers were granted paid holidays. Since 1925, the most important new paid holiday agreements have been those affecting the explosives industry (July 1925), Leicester lambswool spinning (1926), London tanning and currying (1927), asbestos manufacture (1928), good road transport (1935), municipal omnibus services (1935), Smithfield meat-market workers (1936), London flint glass bottle makers (1936), furniture removers (1936), and pottery workers (April 1937).

The increase in the number of these agreements since 1926 has been offset to some extent by the lapsing or termination of certain agreements, and the diminution in the number employed on railway service.

It is estimated that at the present time about 1,750,000 manual workers are paid during holidays. In addition, of course, there are approximately 5,000,000 workers in offices and the distributive trades and officials of industrial undertakings and government workers who are granted paid holidays.

Affecting a smaller number, but showing a more consistent development, is the welfare work inside factories. An official of the Industrial Welfare Society estimates that there are 1,200 firms in Britain now operating such amenities as a ten-minute mid-morning break, accompanying repetitive processes with gramophone records of light music, providing cheap and well-cooked meals in specially equipped canteens, restaurants, rooms for women workers, recreational facilities, and well-decorated private cinemas used occasionally for the development of amateur dramatic talent among the firms' staffs.

The tendency towards improved architectural design in factories, with increasing use of glass suntraps, has been noticeable on trading estates, especially to the west and north-west of London.

**Wellesley College** in Wellesley, Mass., founded in 1870, is a four-year liberal arts college enrolling approximately 1,500 women. It is pre-eminently for candidates for the B.A. degree, but also offers the degrees of Master of Arts and Master of Science, and a certificate in hygiene and physical education. This department received new impetus during 1937 when a fund was completed for building a

swimming pool.

In 1937 there were approximately 12,000 graduates, representing a wide variety of interests. The faculty numbered 180 men and women trained in nearly 100 universities and colleges. The self-perpetuating board of trustees consisted of 23 men and women. The college had trust funds amounting to \$10,191,157 and a plant valued at \$10,808,888.

Wellesley tradition includes an emphasis on scholarship, intelligent religious interest, constructive citizenship and aesthetic appreciation. Special events during 1937 emphasizing these traditions included: discussions on problems of religion sponsored by the Christian Association and Biblical History Department; presentation of Gluck's ballet, *Don Juan*, by the Theatre Workshop, Orchestis Dance Group, and Orchestra; presentation of Bach cantata by the choir with Princeton College Choir and Harvard Glee Club; Sesquicentennial Conference on the Federal Constitution and authorization by Sigma Xi honorary science society of a Wellesley chapter. (M. H. McA.)

**West Indies**, an archipelago between Florida and South America, including the Greater Antilles (Cuba, Hispaniola, Porto Rico, and Jamaica, with lesser, adjacent islands) and the Lesser Antilles; languages, Spanish, English, French, and Dutch. The area is approximately 99,000 sq.mi. Population (estimate, 1937) 12,020,578; predominantly white in Cuba and Porto Rico; elsewhere, over 90% negroid, except in Trinidad, where it is 40% East Indian. The West Indies includes three republics, two United States dependencies, and nine European colonial dependencies (six British, two French, one Dutch), with their several subdivisions. Trade is principally with the United States and, in the case of colonies, with their respective metropolises. Imports are largely flour and other foodstuffs, textiles, and miscellaneous manufactured articles. Exports comprise sugar and other products of tropical agriculture and, from Trinidad and Curaçao, petroleum products. Resources are almost entirely agricultural, except in the larger islands where some undeveloped mineral resources exist, and in Trinidad and Curaçao. Economic conditions in 1937 showed a general improvement. (See BAHAMAS; BARBADOS; CUBA; CURAÇAO; DOMINICAN REPUBLIC; GUADELOUPE; HAITI; JAMAICA; LEEWARD ISLANDS; MARTINIQUE; PORTO RICO; TRINIDAD AND TOBAGO; VIRGIN ISLANDS; WINDWARD ISLANDS.)

(L. W. BE.)

**West Virginia**, popularly known as the "Panhandle State," was formed from Virginia during the Civil War and admitted to the Union, June 20, 1863. It has an area of 24,170 sq.mi. Its population in 1930 was 1,729,205 of which 1,613,934 were whites (51,520 foreign-born). Its total urban population was 491,504. Its population July 1, 1937, was estimated at 1,865,000. Its capital is Charleston (population 60,408). Its other chief cities are Huntington (75,572) and Wheeling (61,659). It has 4,125mi. of steam railway, 381mi. of electric railway and a new and extensive system of improved highways (over 4,315mi.).

The chief state officers in 1937 were: governor, Homer A. Holt; secretary of state, William S. O'Brien; treasurer, R. E. Talbott; auditor, Edgar B. Sims; attorney-general, Clarence Meadows; commissioner of agriculture, J. B. McLaughlin; superintendent of schools, W. W. Trent.

**Education.**—Education is free in the public schools for all children between six and 20 years of age and is compulsory for all between seven and 16. The pupil enrolment in the state elementary schools for 1937 was 334,311. In the 400 state high schools it was 120,104. The number of teachers was 11,545



in the elementary schools and 4,505 in the high schools. The total State appropriation for elementary and secondary education in 1936-37 was \$13,545,502.

The State supports eight teachers-training colleges which have a total student enrolment of 3,272 and a total instructional membership of 236. It also supports the West Virginia university which in Dec.

1937 had an enrolment of 2,668, a total faculty membership of 232, and (for the year 1936-37) had a total income of \$2,292,501.

**Banking and Finance.**—On July 1, 1936, the total deposits of the 106 State banks and trust companies was \$130,527,814. The total deposits of the 79 national banks in the State was \$142,458,000.

The summarized finance statement of the State treasurer for the fiscal year 1936-37 is as follows:

Balance July 1, 1936	\$ 8,752,050.15
Receipts for 1936-37	130,953,227.51
Total	\$139,705,277.66
Disbursements, 1936-37	127,151,842.05
Balance, July 30, 1937	\$ 12,553,435.61

On July 1, 1937, the total State bonded debt was \$81,494,300; the total amount of outstanding State road bonds was \$75,927,000.

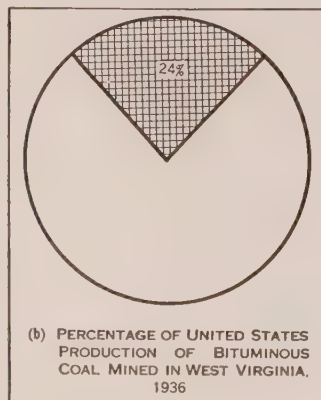
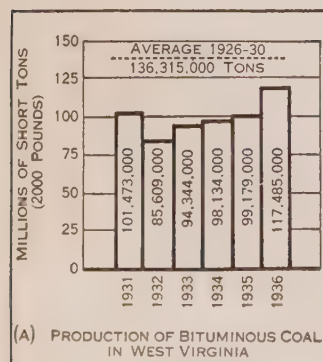
The total assessed value of all property in 1937 was \$1,784,632,554 (real estate, \$830,798,008; personal property, \$371,683,346; public utilities, \$582,151,200).

The Federal income tax collected in West Virginia for the fiscal year 1936-37 was \$9,236,843 (of which \$4,951,179 was from corporations and \$2,412,516 from individuals). The Federal tax on capital stock was \$640,555; on transfer of estates of decedents, \$901,055; on property transfers by gifts, \$331,536.

**Industries.**—In 1935 the oil production of West Virginia was 3,959,000bbls. (which decreased to 3,847,000bbls. in 1936) and the natural gas production was about 100,000,000,000 cu.ft. The coal production was 99,179,000 short tons of which nearly 31,000,000 was produced from the Kanawha geological series. It and the coking operations (1,758,795 tons) furnished employment for 109,779 persons. In 1936 coal production showed a marked increase—83,950,493 tons to Oct. 1, or about 117,000,000 tons. In 1935 the State had 1,042 industrial establishments, which em-



HOMER A. HOLT, governor of West Virginia



ployed 77,317 persons and paid \$80,105,045 in wages. These plants had a total production of about \$370,230,129—indicating a considerable decrease since 1929 but well above figures for 1931 and 1933.

**Agriculture.**—The acreage, production and value of the chief farm crops during 1936 were as follows:

	Acreage	Yield	Value
Corn . . . . .	503,000	11,569,000 bu.	\$12,147,000
Wheat . . . . .	150,000	2,025,000 bu.	2,167,000
Oats . . . . .	67,000	1,206,000 bu.	687,000
Buckwheat . . . . .	17,000	255,000 bu.	217,000
Hay . . . . .	690,000	516,000 tons	7,290,000
Apples . . . . .	..	2,304,000 bu.	2,557,000
Potatoes . . . . .	32,000	1,920,000 bu.	2,496,000

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**Whaling:** see FISHERIES: *Whaling*; WILD LIFE CONSERVATION.

## Wharton, Mrs. Edith Newbold Jones

(1862-1937), American novelist noted chiefly as chronicler of early Fifth avenue, was born in New York city, Jan. 24. Although receiving no formal education, she began writing short stories and volumes on travel at an early age. It was not until her first novel, *The House of Mirth* (1905), however, that she became widely known. Her next great success, *Ethan Frome*, a tragedy of New England life (1911), was followed by relief work in Paris during the World War. Her literary work was resumed in 1920 with *The Age of Innocence*, most popular of her novels and winner of the Pulitzer prize for the year. Having established a reputation, she continued to produce successful stories including four volumes portraying life in New York city from 1840 to 1870. After 1906 most of her life was spent in France, where she died on Aug. 11, 1937 at her villa near Saint Brice. Further information regarding her career may be found in the *Encyclopædia Britannica*, vol. 23, p. 557.

**Wheat.** World production was 3,808,000,000bu. in 1937, as against 3,544,000,000bu. in 1936 and an average for the last five years of 3,674,000,000 bushels. During the last ten years world consumption has averaged about 3,770,000,000bu. annually. These figures throughout omit Russia and China, for which no reliable data are available. For the Northern Hemisphere the 1937 harvest is estimated at 3,378,000,000 bushels. European production is placed at 1,530,000,000bu.; that of the United States, 873,993,000bu., and Canada 183,000,000 bushels. The Southern Hemisphere's production totalled about 378,000,000 bushels. Of this 163,000,000bu. represented the Australian crop and 15,000,000bu. the harvest of the Union of South Africa. Frost damage near the end of the year reduced the Argentine harvest from 230,000,000 to an estimated 200,000,000 bushels.

**Exports.**—Estimated exports for 1937-38 are placed by the United States Department of Agriculture at 485,000,000bu. divided as follows: United States, 95,000,000bu.; Canada, 65,000,000bu.; Argentina, 95,000,000bu.; Australia, 100,000,000bu.; Danubian countries, 65,000,000bu.; others, 60,000,000 bushels. World wheat supplies increased from 1929 to and including 1933, but, until 1937, declined because of droughts in the United States and also in Europe. The 1937 crop is the first yield since 1933 with a trend toward a small surplus.

**Wheat Harvest Months.**—In considering world-wide wheat production it should be appreciated that practically every day in the year is a wheat harvest day somewhere in the world. Follow-



# WHEAT

ing are the wheat harvest months of the principal wheat-producing countries:

January—Australia, New Zealand and Chile.

February and March—East India, Upper Egypt.

April—Lower Egypt, India, Syria, Asia Minor, Persia, Cyprus and Mexico.

May—Algeria, Central Asia, China, Japan, Morocco; in the United States, Texas.

June—Southern France, Italy, Spain, Portugal, Turkey, Greece; in the United States, Alabama, Arkansas, California, the Carolinas, Georgia, Kansas, Kentucky, Louisiana, Mississippi, Missouri, Oklahoma, Tennessee, Virginia.

July—Germany, France, South of England, Czechoslovakia, Rumania, Bulgaria, Austria, Hungary, South Russia, Switzerland; in Canada, Ontario; in the United States, Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Nebraska, New England, New York, Ohio, Oregon, Washington, Wisconsin.

August—England, Belgium, Holland, Denmark, Poland; in Canada, the Western Provinces and Quebec; in the United States, the Dakotas.

September and October—Scotland, Sweden, Norway, Northern Russia.

November—Argentina, Peru, South Africa.

December—Argentina, Burma.

**United States Harvest.**—The 1937 crop is the largest in the United States since 1931. The yield was estimated at 13.6bu. to the acre. In all, 64,460,000ac. were harvested, yielding 873,993,000 bushels. This compares with an acreage of 48,863,000ac. and a crop of 626,766,000bu. in 1936 when the yield was 12.8bu. to the acre. The 1937 crop consisted of winter wheat to the amount of 685,102,000bu. and 188,891,000bu. of durum and other spring wheats. The hard red spring wheat and durum wheat are about ample for domestic requirements. There is, however, a considerable excess of hard and soft winter wheat and of white wheats, from which exports may be drawn in larger volume than the 95,000,000bu. estimated for the exports from the United States in 1937-38. It is expected that the United States will have a carryover of about 200,000,000bu. July 1, 1938. The carryover July 1, 1937, was 91,200,000bu., and July 1, 1936, it was 142,256,000 bushels. The record quantity of old wheat held over in the United States was on July 1, 1933, when stocks on hand amounted to 378,000,000 bushels. The average carryover from 1930 to 1934, as of July 1, was 326,000,000 bushels. The parallel average for the five-year period of 1924-28 was about 115,000,000bu. of holdover wheat. The world carryover July 1, 1937, was estimated at 518,000,000 bushels. July 1, 1936, it was 727,000,000 bushels. July 1, 1935, it was 915,000,000bu., and the year before that (1934) it was 1,155,000,000 bushels. The largest wheat crop ever produced in the United States was in 1915, when, under the influence of World War prices, 1,025,801,000bu. were harvested.

Prices for wheat have generally advanced steadily since 1933, a movement that reflected the widespread rise in commodity prices and four successive harvests that were below average in the Northern Hemisphere and the short crop of 1935-36 in the Southern Hemisphere. Prices in 1937 rose sharply in June and July on news of serious damage to the Canadian crop and on reports of drought injury to spring wheat in the United States, and the threat of rust damage. This information proved exaggerated and prices declined. There was further decline in the autumn as commodity prices reflected the break in the security markets. In November and December news of shorter crops in the Danubian countries, serious frost damage to the Argentine crop, principally in the Province of Buenos Aires and the Territory of La Pampa, and a renewed activity by purchasers in importing countries caused a stiffening of prices. Russia, however, continued to be the largest factor of uncertainty in the price situation. The U.S.S.R. had a larger crop than in 1936. What portion of this may come into world markets is wholly problematical, as both production and distribution are controlled by the Soviet Government and political as well as economic forces dictate commodity movements. Today



Upper: 10,000 BUSHELs of Texas Panhandle wheat are dumped on the ground waiting storage space

Centre: KANSAS THRESHING MACHINE contributes to the largest U. S. wheat crop since 1931

Lower: RAILROAD CAR HOISTED IN AIR and tilted to unload its cargo of wheat at the Santa Fe elevator in Turner, Kansas



Russia has not the same need to maintain foreign balances by exporting wheat as she did several years previously, and no undue quantity of Russian wheat may come into world markets.

**World Production in 1937.**—*North America:* United States, 873,993,000bu.; Canada, 183,000,000; Mexico, 13,000,000.

*Europe:* Italy, 296,010,000; France, 246,000,000; Germany, 161,000,000; Spain, 135,000,000; Rumania, 136,000,000; Yugoslavia, 86,000,000; Hungary, 70,000,000; Poland, 68,000,000; Bulgaria, 57,000,000; Czechoslovakia, 51,000,000; England and Wales, 49,000,000; Greece, 34,000,000; Sweden, 27,000,000; Belgium, 15,000,000; Austria, 15,000,000; Portugal, 15,000,000; Netherlands, 13,000,000; Denmark, 12,000,000; Ireland, 8,000,000; Lithuania, 8,000,000; Latvia, 7,000,000; Switzerland, 6,000,000; Finland, 6,000,000; Scotland, 4,000,000; Norway, 3,000,000; Estonia, 3,000,000; Albania, 1,000,000; Malta, 326,000.

*Asia:* India, 366,000,000; Turkey, 141,000,000; Japan, 49,000,000; Syria and Lebanon, 17,000,000; Chosen, 11,000,000; Palestine, 3,000,000.

*Southern Hemisphere,* excluding South Africa: Argentina, 200,000,000; Australia, 163,000,000.

*Africa:* Egypt, 46,000,000; Algeria, 34,000,000; Morocco, 19,000,000; Tunisia, 19,000,000; Union of South Africa, 15,000,000.

The acreage seeded for harvest in 1937 in the United States was estimated by the Department of Agriculture at 81,000,000ac., the largest in the history of the country. The previous largest acreage was in 1919, and from that year to and including 1924 the seeded acreage declined from 77,000,000 to 56,000,000 acres. It rose to 71,000,000ac. in 1928 and during the 1924-32 period averaged 67,000,000 acres. The Department of Agriculture sees possibility of a still larger increase in the acreage seeded for harvest in 1938. Wheat prices have been relatively high as compared to rye and there is a probability that growers will reduce the 1938 rye acreage in favour of wheat. Further shifts from corn to wheat, the department points out, were indicated in parts of the hard red winter wheat areas because dry weather has made corn-growing unsatisfactory in recent years. Had not a very heavy abandonment of wheat acreage taken place in 1937 the crop probably would have exceeded 1,000,000,000bus. and possibly the peak record of 1915. (See also CEREALS.) (S. O. R.)

**White, Maude Valerie** (1855-1937), British composer of popular songs; born at Dieppe, June 23. Miss White studied at the Royal Academy of Music, London, and was elected to the Mendelssohn scholarship, which, however, ill-health caused her to give up. She did her best work with settings of words by Herrick and Shelley, such as "To Daffodils" and "To Electra" from Herrick, and "My Soul is an Enchanted Boat" from the "Prometheus Unbound" of Shelley. Her most popular song was "Until." In 1894 she published a translation of Axel Munthe's *Letters from a Mourning City* (Naples). She died in London, Nov. 2, 1937.

**White Russian S.S.R.** lies in the west of the Soviet Union, bordering on Poland and Latvia, and forming an important strategic outpost. The capital is Minsk, and the national flag is red, with the hammer and sickle on the left in gold, with a five-point star above and initials BCCP underneath. Of the leading cities, Minsk had (1936) 198,000 inhabitants, Vitebsk 143,800, and Gomel 139,500.

**Area and Population.**—Area: 127,000 sq.km., mainly plain, with hills in the north, and great marshes in the south, which are now gradually being drained. Population (1933), 5,439,000 (rural 4,549,000, urban 890,000), made up of 80.6% White Russians, 8.2% Jews, chiefly in the towns, 7.2% Russians, and the rest Ukrainians, and Poles.

**History.**—On February 19 the Twelfth Extraordinary White Russian Soviet Congress in Minsk adopted the new constitution of White Russia. According to paragraph 14 of the constitution, the republic includes 4 regions, 66 districts, and 4 towns with independent administrations. With the participation of 97.4% of the population in the elections to the Supreme Council of the U.S.S.R. on Dec. 12, 1937, White Russia takes second place among the Union Republics. The campaign carried on in the whole of the Soviet Union against alleged Trotsky wreckers and Fascist spies also claimed many victims in White Russia. Many of the heads of the republic (including 2 premiers), as well as high party officials, were denounced and imprisoned. Some of the accused, including President Chervyakov, committed suicide.

**Trade and Communications.**—*Agriculture:* Sown area (1936) 14,589 square miles. In 1937 there were 87.5% collectivized peasant households. Chief products: potatoes, flax, hemp. In pig culture, White Russia holds the first place in the U.S.S.R.

Natural resources include peat and valuable forest land (one-quarter of the territory of the republic). Commerce and Industries: Retail trade turnover (1936) 2.3 milliard roubles. Chief exports: Pork, bristles, timber, paper, matches, machine tools.

Nineteen hundred and thirty-six output of industry (prices 1926-27) 1,413 million roubles; 1936 output of electricity—388,000,000 kilowatt hours.

Industries: linen, footwear, bristles, food, timber, paper, matches, cement, glass, tailoring, metal.

**Transport.**—In 1936, 3,094km. of railways carried, 18,365,000 tons of freight. (S. YAK.)

**Wholesale Prices:** see PRICES, STATISTICS OF.

**Widor, Charles-Marie** (1845-1937), French organist and composer who until 1934 was a director of the American Conservatory of Music at Fontainebleau. Born in Lyon, Feb. 22, 1845, he studied in Brussels under Lemmens and in 1891 succeeded César Franck as professor of organ playing at the Paris Conservatory. It was as organist of the Church of St. Sulpice, Paris (1869-1934), however, that he won a reputation as one of the greatest masters of organ technique and program-making. In 1910 he was elected to the French Academy of Fine Arts and after 1914 served as permanent secretary of that body. Among his compositions were ten symphonies and many suites, concertos, sonatas and chamber pieces. He also published *Technique of the Modern Orchestra* (1905). He died in Paris, March 12, 1937.

**Wild Life Conservation.** Notable progress has been made in the general field of wild life conservation during 1937.

**Whaling.**—The urgent need for stricter regulation of the whaling industry in order to conserve existing whale stocks, especially of certain rapidly diminishing species, has long been not merely a matter of sentiment, but of serious economic import to many nations of the world.

The international agreement for the regulation of whaling was signed at London, June 8, 1937. The signatories were the United States, Union of South Africa, Argentina, Australia, Germany, Great Britain, Irish Free State, New Zealand, and Norway. The agreement has been ratified by the United States, Great Britain, Norway, and Germany, and will become effective when ratified by a fifth signatory. It supplements the international convention for the regulation of whaling of 1931, now in force between the United States and 26 countries which are expected to become parties to the present agreement. The agreement forbids the kill-



ing of certain species below specified lengths. It forbids the killing of calves and of female whales accompanied by calves or suckling young. It limits the area and time within which certain types of whaling operations may be carried on. A record of whales treated by each factory is to be submitted to the international bureau for whaling statistics, in Norway, for the information of the signatory powers.

Some idea of magnitude and of economic values involved in the whaling industry may be gained from the operations of floating whaling factories of various nationalities in the Antarctic alone during the season from December to March 1937. Thirty factory ships and two land stations, with 194 killer boats, are reported to have taken about 40,000 whales from which were extracted 2,681,855 barrels of oil. The value of the oil is more than \$44,000,000.

**Migratory Bird Treaties.**—Migratory bird treaties in various forms had been pending between the United States and Mexico for more than 10 years. The convention for the protection of migratory birds and game mammals was signed in the City of Mexico, Feb. 7, 1936. This agreement became effective when ratifications by both countries were exchanged in Washington, March 15, 1937. It is similar to the migratory bird treaty with Canada (through Great Britain) in general terms but more comprehensive, and protection will be extended to about 140 migratory species not included in that agreement. Like the treaty with Great Britain, the convention with Mexico is to remain in effect for 15 years, after which it may be continued indefinitely, unless abrogated by one or the other of the nations by giving notice one year in advance.

**Migratory Bird Refuges.**—Seventeen new bird refuges were established by executive order in the United States during 1937, under a National program for migratory waterfowl restoration initiated three years ago. The number of Federal refuges is now 209, embracing about 4,500,000 acres. (See also BIRD REFUGES.)

**Federal Aid.**—The Pittman-Robertson Act, known as the Federal Aid to Wildlife Restoration Act (Public No. 415, 75th Congress approved Sept. 2, 1937), was the result of concerted efforts by wild life conservation organizations throughout the United States to provide means of restoring natural conditions for wild life, especially species hunted as game. Under the terms of the measure the secretary of agriculture is authorized to co-operate with the States, through their game and fish departments in the apportionment in accordance with specified conditions, of Federal funds for carrying out State wild life restoration projects.

For the purposes of the act, the revenue accruing during the fiscal year 1939 and succeeding years from the 10% tax imposed by section 610, title IV, of the Revenue Act of 1932 (47 Stat. 169) as amended, on firearms, shells, and cartridges is authorized to be set apart as "the Federal aid to wild life restoration fund." This fund will be available until expended.

During the fiscal year 1937 the amount collected under the tax was \$3,234,000, an indication of what may be expected in future years when the act will be in force. Of this total, not to exceed 8%, or \$258,720, would be authorized to be deducted for the administration of this act and the migratory bird conservation act.

(E. A. G.)

**Williamsburg Restoration.** The Williamsburg restoration at Williamsburg, Va., represents "an endeavor to restore accurately and to preserve for all time the most significant portions of an historic and important city of America's colonial period." The undertaking, envisaged by the Rev. W. A. R. Goodwin, rector of the Bruton parish church of Williamsburg, and begun in 1927, was made possible through the munificence of Mr. John D. Rockefeller, Jr. The work has

been accomplished through an exhaustive study of archaeological, architectural and documentary materials of the 17th and 18th centuries. Investigation was made by research workers in libraries and other repositories of American historical materials throughout the United States, England and France.

The selected area has been restored to its 18th century appearance and comprises Duke of Gloucester street, the principal thoroughfare of the city, and certain adjacent squares and greens upon which were located the colonial Capitol, the "governor's palace," the colony jail and other public buildings and numerous private residences. The more important of the public edifices, including the Capitol and the governor's palace, both of which had burned to the ground, have, with the exception of their brick foundations which remained, been entirely reconstructed from archaeological and documentary evidence. A number of the buildings required only slight alterations to restore them to their 18th century aspect. Of much assistance in the restoration of the major buildings was the discovery in 1930 of a forgotten copperplate engraving in the Bodleian library at Oxford university upon which was represented various elevations of these edifices.

Duke of Gloucester, "a noble great street" and one of the carefully planned thoroughfares of colonial times, extends seven-eighths of a mile from the College of William and Mary at its western to the colonial Capitol at its eastern extremity. The Wren building, the main structure of the college, was originally designed by Sir Christopher Wren and adapted "to the nature of the country by the gentlemen there." It is the oldest academic building in the United States and the only building in America designed by the great English architect. Its restoration, the first major project accomplished, was made a gift to the college by Mr. Rockefeller.

Altogether, in the restored area 507 buildings were wrecked, 21 were moved out, 122 have been reconstructed, and 67 restored and repaired. The educational purpose of the restoration has been emphasized at all times. (H. D. F.)

## Windsor, Edward, H.R.H. the Duke of

(1894— ), formerly H.M. King Edward VIII of Great Britain and Ireland; the eldest son of King George V, he succeeded to the throne on Jan. 20, 1936, but in view of the advice of his ministers that his projected marriage with Mrs. Simpson, an American citizen whose second divorce was then pending, was incompatible with his retention of the throne, he abdicated on Dec. 11 of the same year, leaving England for Austria, where he took up residence at Schloss Enzesfeld, the home of the Baron Eugene de Rothschild.

In Feb. 1937, the duke was visited by his sister, the princess royal, and her husband the earl of Harewood; and on March 29 he removed from Enzesfeld to St. Wolfgang. On May 4 he joined at the Chateau de Candé, near Tours, Mrs. Simpson (who had meanwhile resumed her maiden name of Warfield), the formalities of whose divorce from her husband Mr. Ernest Simpson, had been completed on the previous day, and on June 3 his marriage with Mrs. Wallis Warfield took place at the chateau, an Anglican clergyman performing the religious ceremony. It had been officially announced a few days previously that the style of "Royal Highness," enjoyed by the duke, would not be shared by his wife or descendants, if any. After the marriage the duke and duchess travelled to the Castle of Wasserleonburg, in Carinthia, for their honeymoon, remaining there until September, when they removed to Borsodivanka in Hungary, the home of Mr. Charles Bedaux, an industrial psychologist unpopular in American labour circles. At the beginning of October, during a visit to Paris, was announced the Duke's intention of visiting Germany and the United States to





THE DUKE AND THE DUCHESS of Windsor after their marriage at Monts, France

study social and housing conditions. The proposed visit to Germany followed at once, the duke meeting Hitler, Goebbels, and other statesmen in Berlin; but the visit to America was cancelled, on the eve of departure, strong opposition, largely on the ground of the association of Mr. Bedaux with the trip, having been expressed in the British and especially the American press. In November, an apology and damages were secured by the duke as the result of the agreed settlement of a libel action against the author and publishers of Mr. Geoffrey Dennis's *Coronation Commentary*, a book which contained certain unflattering observations on his royal highness.

**Windward Islands,** a British West Indian colony including Grenada, St. Lucia, and St. Vincent; language, English; capital, St. George's (Grenada); governor, Sir H. B. Popham. The area is 616 square miles. The population, predominantly negro and mulatto, was officially estimated at 205,804 in 1935. The chief cities are St. George's, 5,000, and Castries (St. Lucia), 20,000. The colony is administered by a governor and council, with subordinate executives and councils for each island. In 1936 imports totalled £650,963, 51% from Great Britain. Exports (cocoa, sugar, and other tropical agricultural products) were £627,400, chiefly to Great Britain (33%), the United States (23%), and Canada (19%). The monetary unit is the pound sterling.

**Wines.** There has been a notable expansion in the American wine industry since prohibition was repealed. It is estimated that the consumption of Californian wines in 1937 was 65,000,000 American gallons, compared with 53,834,364 gallons in 1936, 40,049,460 in 1935, and 26,166,091 in 1934. Last year 560 wineries crushed 494,000 tons of grapes and produced 53,160,688 gallons of wine.

Latest reports from the wine-growing districts of Europe indicate that the new wines are developing well. They confirm earlier

opinion crediting 1937 with having produced a vintage of exceptional merit, but also indicate that there are the usual and inevitable exceptions to the rule. Quality and quantity are indeed rarely found together in the world's vineyards, and the yield has been far from abundant. In the claret country the quantity is short, although not so short as some experts had anticipated, and the quality is good. This also applies to burgundy, where one report gives the quality as quite exceptional and the yield far below the previous year. In champagne the wines are said to be good, but the quantity "middling." Very fine hocks and moselles have been produced in diminished volume, but those who compare the German wines with the "wonder" year of 1921 are probably over-optimistic. Madeira has achieved fine wines without any drop in production. In Portugal the harvest was greatly aided by opportune showers prior to the gathering, and there is no doubt that the heavy rains of the last two winters have had a beneficial effect in maintaining the old vines in condition throughout the summer drought. The year 1937 also saw the arrival of the 1935 ports in England to be bottled and laid down for maturing. All the shippers have offered either the 1934's or the 1935's as a year. In the Jerez vineyards the harvest was gathered under wartime conditions. For some time past the bodegas have been denuded of workmen who have gone to join the fighting forces. Coopers find difficulty in getting staves for their casks, importation of these having been rationed. Indeed, the cost of all materials has increased enormously. Yet shipment of sherry to England continues increasing in volume, to meet the ever-growing demand.

In South Africa the vintage is harvested in the English spring, and this applies to Australia and the other wine-growing countries of the Southern hemisphere, of which Chile is the most prominent.

**World Production.**—The short harvest of 1937 follows a period in which conditions have favoured heavy yields. For the five years prior to 1933 the world's average annual production was 173,000,000 hectolitres. In 1934 it was 211,000,000 hectolitres, and in 1935 222,000,000 hectolitres; and this swollen production was achieved without any appreciable increase in the area under vines.

About 90% of the world's harvest is produced in Europe. France, Italy, Spain, Portugal, and Germany are the chief exporters and producers. With the exception of Algeria and Chile (which export considerable quantities) and South Africa and Australia (which find a good market in the United Kingdom) the yield elsewhere is almost exclusively consumed in the countries of origin. (D. F. C.)

**Wire Photos:** see PHOTOGRAPHY: *Special Applications*.

**Wisconsin,** the fifth and last State to be created under the Ordinance of 1787, is popularly known as "the Badger State." It has an area of 56,066 sq. mi., and the population in 1930 was 2,939,006. The capital is Madison, population 57,899; the largest city, Milwaukee, population 578,249. Urban population numbered 1,553,843, all whites except for 9,873 negroes and 3,692 of other races. The rural population, 1,385,163, contained only 866 negroes and 10,716 of other races, practically all Indians settled upon reservations. There were 386,213 foreign-born whites. In rural society native whites of native parentage constituted 44% of the whole, native whites of foreign parentage 40.5%. In the urban population, native whites of native parentage were 35.7%, those of foreign parentage 43.4%. The foreign-born made up 20.4% of urban, 14.8% of rural population.

**History.**—Wisconsin territory was created by Congress April 20, 1836. The population at that time was 11,683. Lead miners and smelters, who were largely from Missouri and Kentucky,



dominated territorial politics for some years, but were superseded by the rapidly increasing agricultural and village population of the south east—the Yankee element. By 1848, when Wisconsin entered the Union, the Yankees were in control politically, industrially and socially—a position they maintained till about the close of the 19th century. Lumbering, shipping, general manufactures, railroad building, were all promoted largely by Yankees.

#### Political Changes.—

Foreign elements gradually gained in importance. Germans, Scandinavians, Poles, Bohemians, and others entered Wisconsin in such numbers that by 1890 she was often referred to as a German commonwealth. The foreign born being most largely farmers or labourers, "common people," were not wholly sympathetic with the dominant element which they considered aristocratic and exploitative. Rendered suspicious and intractable by legislation affecting religious education, and by the legally permitted exactions of railroads, the common people revolted under the leadership of the late Robert M. La Follette.

**Legal Changes and Officers.**—Among the first fruits of the movement was Wisconsin's primary election law followed by much meliorative and regulative legislation. The constitution adopted in 1848 is still the State's fundamental law, but numerous amendments, by two successive legislatures, have been adopted. A vital one permits the governor to veto single items in appropriation bills. The officers elected in 1936 were Philip Fox La Follette, governor; Henry A. Gunderson, lieutenant-governor; Theodore Dammann, secretary of State; Solomon Levitan, State treasurer; and Orland S. Loomis, attorney-general. The election represented a triumph for the newly organized Progressive Party, which also gained a controlling voice in the legislature. But Roosevelt, Democratic candidate for President, received 802,984 votes to Landon's 380,826, and 74,748 for all others.

**Education.**—Yankee control of the new State insured a careful regard for its educational interests. Despite some mismanagement of the school fund arising from the premature sale of the school lands, the laws compelled the general maintenance of common schools, a high school system was superimposed upon them, and a State university, coeval with the State, caps the system. Agricultural and industrial education have been stressed, and there is a system of vocational instruction for adults.

**Hygiene and Corrections.**—A board of control which governed all penal and charitable institutions was abolished by recent legislation, its functions being divided between a Department of Mental Hygiene and a Department of Corrections. The State has a system of old age, widows, and teachers pensions; it maintains a hospital for crippled children and affords them other aids; and it has met the problem of outdoor relief during the depression by co-operating with the Federal relief departments.

**Banking and Finance.**—A banking commission of three members is empowered to examine banks, and loan associations of all kinds, and to control the conditions under which closed banks can reopen. It also handles Federal assistance to banks. Many banks which succumbed to the depression have been stabilized through refinancing under the commission's direction. Building



PHILIP F. LA FOLLETTE, governor of Wisconsin

and loan organizations, an important factor in financing homes, are controlled by the banking commission as are sales financing, credit unions, and small loan and discount companies. State business is controlled by a State budget bureau.

**Agriculture, Manufacturing, Mining.**—Wisconsin's agriculture centres in dairying. The product of her farms in 1936, including only crops and milk, was valued at \$375,000,000, about \$175,000,000 of which was credited to milk reckoned at farm price values. The State leads all States in production of cheese. Mining, once very important in the lead region, is now a minor interest, though northern Wisconsin shares to a small extent in the iron and copper deposits which are of such great importance in the neighbour States of Minnesota and Michigan. The State's manufactures, which include lumber, paper and pulp, furniture and wooden-ware, farm machinery, engines, automobiles, electrical appliances, etc., greatly exceed in value her agricultural productions. In 1935 she stood tenth among the States in aggregate value of manufactures. (J. Sc.)

**Wisconsin, University of.** The university at Madison, Wis. continued during 1937 its thorough survey of different scientific fields under its unique science set-up, the science inquiry, through which faculty members attempt to review the teaching and research work of the university in the natural and social sciences in terms of their relation to the political, social, and economic problems of the time, and particularly of the State. Four studies published by the inquiry during 1937 dealt with the conservation of minerals, the fight against crime, the conservation of wild life, and transportation. The Wisconsin Alumni Research Foundation contributed a total of \$163,000 to the university's research funds, which were used to support about 80 old or new science research projects carried on under the direction of faculty members.

America's first state-wide school for workers was established by the university. Designed to provide Wisconsin workers with an opportunity for organized study during the entire year, the new school had an enrolment of 1,116 students in 63 different classes conducted weekly in 26 Wisconsin communities by the end of the year. A new department, known as "the University of Wisconsin Press," charged with the duty of publishing books and bulletins based on the studies and reports of faculty members was established during the year. A new phase in nuclear research was reached at the University of Wisconsin during 1937, through the work of several scientists in developing high voltage atom-smashing equipment with superior advantages over those so far used in this field of scientific research. A generator giving a bolt of lightning at 2,700,000 volts, which is the highest steady voltage that has ever been attained and actually used in atomic disintegration, was developed by the Wisconsin physicists.

The eleventh president in the 90-year history of the university, C. A. Dykstra, city manager of Cincinnati, Ohio, for seven years, took office on July 1, 1937. The university's enrolment reached a new record in the fall of 1937, when 10,800 students registered. (C. A. Dy.)

**Wise, Thomas James** (1859–1937), British bibliographer and book-collector; born October 7. After a private education, he was engaged in business in the London produce market; but all his leisure, and all the available balance of his gradually increasing income, was devoted to his scholarly passion for the collection of first editions in their original condition. His widely famous collection, the Ashley library, is particularly rich in such original first editions of the English poets and dramatists from the Elizabethan age onwards. This library was acquired, some months after his death, by the



British museum. In addition to the 11 volumes of the Ashley library catalogue, Wise published bibliographies of several English poets and novelists, edited Spenser's *Faerie Queene*, and collaborated with Sir William Robertson Nicoll in *Literary Anecdotes of the XIXth Century*. He died May 13, 1937.

## Women's Clubs, General Federation of.

Survey of the many activities of the Federation in 1937 notes particularly the work against crime by the Department of Education, the chairman of which is Mrs. John L. Whitehurst, who in more than 100 meetings in 35 States pointed out the startling facts that in the United States persons under 21 years commit 13% of the murders, 28% of the robberies, 41% of the burglaries, and 51% of the automobile thefts. The Department in American Citizenship, Mrs. Jefferson D. Atwood, chairman, was active against proposed legislation to reduce Federal civil service. The drive against traffic accidents, which the Federation's safety committee, Mrs. Edward Hammett, chairman, has taken to the 15,000 federated clubs, was given further impetus in 1937 in campaigns for drivers' licenses in all States and with a prize offered for the club making the greatest contribution to the prevention of highway accidents. National officers of the Federation are: president, Mrs. Robert Campbell Lawson, 1734 N Street, N.W., Washington, D.C.; first vice-president, Mrs. Saidie Orr Dunbar, 605 Woodlark building, Portland, Ore.; second vice-president, Mrs. Walter W. Seynour, 1726 Euclid avenue, Chicago, Ill.; recording secretary, Mrs. John S. Harvey, 1325 Sixth avenue, Huntington, W. Va.; treasurer, Mrs. Elvella Dickinson, 60 Roxbury street, Keene, N.H. The annual convention at which officers are elected will be in Kansas City, Mo., May 10-17, 1938.

**Wool.** The biggest commercial change in the wool industry of recent years has been the effect of State trading on a large scale. In the totalitarian States, the Governments completely control wool buying. Moreover, the policy of self-sufficiency adopted by them has led to the introduction of a number of blood sheep stocks from Great Britain and the British Colonies into the U.S.S.R. and Manchoukuo, and to the large-scale production of wool substitutes in Italy, Germany, and Japan. As a result, these States are now less important internationally as wool buyers.

Politics have therefore, by bi-lateral trade agreements, quotas, currency control, etc., affected, not only the commerce in raw wool from such countries as Australia, Argentina, New Zealand, the Union of South Africa, and Uruguay (producers who consume only about 5% of their production), but also the export trade in manufactured or semi-manufactured goods from the industrial countries. Of the latter, virtually only two, the United States and the United Kingdom, are both wool producers and large-scale consumers; and of these the United Kingdom, which has the largest number of looms of any country in the world, is the only large exporter. In the United States, owing to high tariffs and high production costs, most of the output is consumed domestically.

**Great Britain and the Wool Industry.**—In Britain the post-war effects of foreign tariffs and currency restrictions on the export trade were to some extent offset by the institution in 1931 of import tariffs, which saved a considerable part of the industry from extinction, attracted French, Belgian, and German capital and technicians to the country, and resulted in an increase in continental types of machinery and much greater British purchases in overseas markets of types of wool that had hitherto been

World Production and Consumption of Wool

	Raw Wool						Semi-Manufactured Wool Products					
	Production (including exports). Greasy Basis in Millions of lb.			Consumption Domestic Production Plus Retained Imports. Actual weight in Millions of lb.			Exports					
							Tops			Wool Yarn		
	1934-35	1935-36	1936-37	1934	1935	1936	1930	1935	1936	1930	1935	1936
Argentina	37.0	36.0	38.0	..	..	..	..	..	..	..	..	..
Australia	109.7	101.5	101.5	..	..	..	9%	11%	14%	9%	10%	15%
Belgium	..	..	..	65	118	141	10.4	14.9	17.6	14.9	11.1	17.4
Czechoslovakia	..	..	..	..	..	..	..	..	..	12%	10%	12%
France	..	..	..	..	..	..	42%	37%	36%	21.2	11.9	13.9
Germany	..	..	..	388	441	390	47.6	40.4	45.9	54.6	23.1	15.4
Italy	..	..	..	351	319	283	17%	2%	1%	13%	9%	15%
Japan	..	..	..	183	156	83	19.3	2.1	1.6	22.6	10.7	17.5
New Zealand	23.7	23.7	23.7	181	243	217	..	..	..	3%	5%	6%
Soviet Union	128.0	158.4	202.1	..	..	..	..	..	..	0.6	5.3	7.1
United Kingdom	115.0	109.0	108.0	196	234	257	..	..	..	..	..	..
Union of South Africa*	222.0	250.0	285.0	604	644	711	26%	42%	41%	22%	36%	32%
United States	451.0	452.7	448.6	559	653	702	28.8	55.9	52.1	37.3	40.9	37.2
Other Countries	..	..	..	..	..	..	..	..	..	..	..	..
World Total	..	..	..	..	..	..	6%	8%	8%	11%	10%	7%
	..	..	..	..	..	..	6.9	9.7	9.8	22.2	11.4	9.0
	..	..	..	..	..	..	100%	100%	100%	100%	100%	100%
	..	..	..	..	..	..	113.0	132.0	127.0	173.4	114.4	117.5

Notes.—The World Total figures include also the production of the less important countries. The percentages given in the last six columns represent the proportion of exports to total world exports.

\*Consumption is less than 5% of production in these countries.

†Consumption is about 5% of production.

Bibliography.—The following sources have been used for the foregoing statistics: Imperial Economic Committee, London; Dalgety & Co., Ltd., London; *Wool Record and Textile World*, Bradford.



regarded as suitable mainly for the Continent. Internal reconstruction by the process of the buying and scrapping of redundant plants has been successfully carried out in one section of the trade through the Woolcombers' Mutual Association. British mills and textile personnel today are somewhat fewer and output smaller than the possible output of twenty years ago. A notable commercial-financial event has been the growth of multiple tailoring, with a greater mass purchasing than would have developed on the price level of bespoke garments. The multiple tailors are now the highest individual consuming firms of wool, and their buying largely has set the pace for the rest of the trade.

**Wool Research.** In recent years many problems have been elucidated and considerable advances made in systems of rendering wool garments unshrinkable and non-irritating. To promote research and, if necessary, the advertising of wool, Australian, New Zealand, and South African wool growers have recently agreed to a levy on each bale of wool they produce, or more prompted by the rapid rise in European rayon staple fibre and other wool substitutes, although it is still undecided whether the substitutes are really of wool or in competition. Italy's substitute "lanital" is made from milk; in such quantities that the latter has to be imported for the purpose. Germany, Great Britain, Japan, and the United States manufacture wool substitutes from wood pulp. None give the same effect as wool, being mostly deficient in elasticity and warmth, in spite of all the efforts of chemists to reproduce wool characteristics.

**World Trade in Wool.** During 1935, 1936, and 1937, owing to political, labour, and currency troubles, France's consumption dropped considerably. Belgium has had a much steadier employment. After a rapid rise to the position of second most important customer of Australia, Japan fell away during 1936, and in 1937, preoccupied by war needs, was taking very little. America only enters the international wool market violently and erratically. During 1936 there was no appreciable increase in the total volume of the world's exporting trade in wool goods. Countries that bought more wool appeared to do so to satisfy demands of home consumers only. Britain retained wool imports were the highest of recent years, and America's takings also increased, while those of France, Germany, Japan, and Russia all declined. About one third of the exports of the five chief raw wool exporting countries were consigned to the United Kingdom, Japan remaining the second largest importing purchaser. The United Kingdom and the United States are the two largest consumers from all sources.

(J. A. Hn.)

**Workmen's Compensation:** see LABOUR LEGISLATION.

**Works Progress Administration:** see ADULT EDUCATION; AIRPORTS; AMERICAN LIBRARY ASSOCIATION; FEDERAL THEATRE; ILLITERACY; NURSERY SCHOOLS; RELIEF; SOCIAL SERVICE; UNITED STATES: *Social Security and Relief*.

## World Armaments.

From the point of view of armaments, the course of history since the end of the World War falls into three fairly distinct phases. Immediately after the War, a combination of exhaustion and idealism led the Powers to limit or reduce their expenditure on armaments. The Washington Naval Treaty represented the high-water mark of this period. There were always exceptions to the rule, notably certain smaller Powers in the South-east and East of Europe, to whom the thrifty French, under the aegis of the late M. Poincaré, made lavish loans for armaments. The quiescent period may be said to have been closed by the failure of the Geneva Naval Conference of 1927 and the consequent retirement of Lord Cecil from the British Cabinet. With this turning-point for the "realists," a somewhat indefinite period ensued; the advocates of

new international order fighting at rear-guard action against the "realists." Finally the latter came into their own with the Japanese invasion of Manchuria in the autumn of 1935, from that point the international situation has progressively deteriorated, and the world's armaments bill has been continually inflated. Among the main factors which have promoted these movements, the increased expenditure on armaments is directly attributable, the advent of the Nazi régime in Germany and the Italian invasion of Ethiopia stand out. The extent to which expenditure on armaments has been increased varies from country to country. Germany has particularly disarmed under the provisions of the Treaty of Versailles, but almost certainly learned to a much greater extent than any other Power. Official figures of German armaments are plentiful, but Nazi Germany are not available, but comparing the figures of 1936-37 with an unofficial estimate for 1934-35 would appear that such expenditure was ten times more in the latter than in the earlier period. In the case of France, though a large proportionate increase, it is not so great as in Germany, because her disarmament was characterized by extreme caution; her estimates for 1937 nevertheless represented "the highest ever in peacetime history." Nor, in the case of France, is it sufficient to examine budgetary figures to ascertain her defence expenditure; for, ever since the construction of the Maginot line, she has been obliged to finance outlays which are deemed to be in the nature of special expenditure by means of special allocations, for which the funds are provided by loans. In 1937 national defence will be increased from 14 billion to 16 billion francs annually, and from an extraordinary capital expense budget which almost equals the ordinary military budget. It should be emphasized, however, that the last reference is to the budget estimate for the army only, not the total defence estimates. More need be said of the world's armaments bill. Wherever we look, the same story repeats itself. In 1936-37 the defence expenditure of Great Britain was £1,960,000,000, the 1936-37 estimates were for £2,930,000,000, and the 1937-38 for £3,100,000,000. In 1934-35 the Japanese expenditure on armaments amounted to ¥34,000,000,000. In 1936-37 the budget provided for ¥39,400,000,000, and in 1937-38 the United States expenditure amounted to \$699,400,000; in 1937-38, comparatively inflated as the United States is from European standards, if they choose, Asia's estimate of expenditure was \$997,000,000. In the case of Italy, the estimate for 1936-37 was 1,000,000,000 lire, and 1937-38 1,100,000,000 lire. The latter figure, however, is a preliminary estimate, for the respective figures are ¥3,450,000,000 lire and ¥3,752,000,000 lire, but the latter figure does not include expenditure on colonies or on Ethiopia, and, apart from that, an official estimate for 1935-36 (the year of the Italian Ethiopian campaign) is ¥3,610,000,000 lire. In 1936-37 it was ¥3,750,000,000 lire. The international menace of these huge armaments is a commonplace. They aggravate the disease which they are designed to cure. The strain which they impose on the economic system is an equally serious aspect of the matter. In 1936-37 the total armaments bill for 1936-37 is accounted for 20% of the estimated budget expenditure; in France in 1937 the proportion was 29.7% (excluding 20% of the special accounts), in Japan in 1936-37 the proportion was as high as 46.6%, in the U.S.S.R. in 1937 it was 20.7%, and in the U.S. for 1936-37 it was 14.4%. Official figures are not available for Germany and Italy, but General Göring's statement of 1936 before the Reichstag speaks for itself, as does also Signor Mussolini's capital levy, making the year 1937-38 the proportion of defence expenditure to total expenditure in the respective countries are as follows: Great Britain 16.8; France 16; Germany 65; Japan 27; Japan 30.9; U.S.S.R. 19.3; U.S. 14.4; 1937-38 21.2; 1936-37 20.7; 1935-36 19.3; 1934-35 18.1.

<sup>1</sup> The figures are in millions of lire. <sup>2</sup> The actual cost being £1,860,000,000.



In wealthy, highly industrialized countries like the U.S., and Great Britain, the strain is of course less great than elsewhere; and its action is delayed. Rearmament, coming in both countries, as it did, at a time of industrial slump, undoubtedly gave industry, more especially the stagnant heavy industries of Great Britain, a welcome and necessary tonic. From an immediate point of view, probably the worst that could be said about the rearmament of Great Britain is that it has diverted public funds which could otherwise have been used for socially beneficial public works such as rehousing, that it has robbed the income-tax payer to pay the steel manufacturer, and that it has led to delayed deliveries in ordinary commercial contracts. From a longer point of view it has not only swollen the public debt, but it has also probably led to that excessive expenditure on capital goods which causes a boom and, when the demand becomes less brisk, inevitably leads to a slump. A concern which has ample resources and can afford to take a long view will be able to wait to do its buying till the selling is not so good; but most ordinary concerns want to do their buying and their selling quickly, and by doing so intensify both the boom and the danger of a consequent slump.

In Great Britain the economic consequences of rearmament are, in so far as they are bad, rather intangible and remote. In Germany they are neither. General Göring's slogan is a clever attempt to impart a heroic flavour to plain human misery. Its reverse side is the necessity of distributing winter relief to millions of Germans. The whole economic system is dislocated in order to enable Germany to pay for imports, such as copper and nitrates, which are necessary for her in enormous quantities in order to keep her armaments and munitions factories working at the pressure at which they have been kept from 1935 onwards. The situation is reminiscent of the story of the two men who flew from Moscow to Kiev during the first five-year plan to see if there were any eggs there; there were none. Russia had exported all her eggs in order to buy aeroplanes. In most of the other countries of the world the economic effect of rearmament resembles the effect on Germany rather than the effect on Great Britain.

The Great Powers have not been alone in rearming. The smaller Powers of Europe, Asia, and America, and the British Dominions have followed suit. It is significant that the recent general election in Australia was fought largely on a defence issue which involved, among other things, a decision as to the type of rearmament which the Commonwealth should carry out. In all, measured in dollars (1936 parity), the world's defence expenditure rose from \$4,067,200,000 in 1931 to \$10,730,700,000 in 1936.<sup>1</sup> This expenditure must be responsible for a substantial part, at least, of that rise in the price of commodities which has taken place since 1931. The effects of this rise have on the whole been beneficial, but, in so far as it has not been due to expenditure of a frequently recurring nature, it must be short-lived and conduce to that economic instability which is so potent a factor for war.

In this connection it will be of interest to examine some of the ways in which the leading rearming Powers have allocated their expenditure. Certainly one of the most striking increases since 1931 is in sums which many of the Powers spend on their air forces now, as compared with then. Germany had no air force in 1931. She is now, perhaps, the greatest air Power in the world, and while no authoritative figures are available either as to her defence expenditure or as to the material actually in use, one of the most striking aspects of her strength is her capacity for the rapid building of aeroplanes; this capacity has

been rated at between 400 and 800 aeroplanes a month.<sup>2</sup> This must clearly involve a very high degree of capital expenditure, the creation of a plant and an organization which are not normally working at anything approaching full pressure. Information as to manufacturing capacity is, for obvious reasons, not easy to obtain in connection with any Power; but, to put it at its lowest, it is at least a reasonable guess that other Powers have to some extent followed Germany's example, for in the present state of invention, and in view of the wastage which would inevitably occur in war, the capacity to build aeroplanes quickly is almost the vital factor in a nation's air strength. And some indication of the extent of expenditure of this kind is provided by the British air estimates for 1936-37, in which "technical and warlike stores" and "works, buildings, and lands" were jointly responsible for a total of £35,896,000.

Outside air forces, it is equally clear that immense sums are being spent on objects which cannot, in the nature of things, recur except at very long intervals or in time of war. The naval construction programs of the United States, Japan, and Great Britain; Great Britain's expenditure on the Singapore base and on the strengthening of the Mediterranean bases; France's "special treasury accounts" which financed the construction of the Maginot line, and in 1937 were estimated to comprise extraordinary expenditure of a total of 9,448,300,000 francs; above all, the astounding efforts which raised Germany to "a commanding position of military power" by the end of 1936, only 21 months after the denunciation of the military, naval, and air clauses of the Treaty of Versailles; all these must be responsible, with other factors of the same kind, for a dislocation of the world's economic system which has no parallel except in the War of 1914-18. Great Britain, France, Germany, Japan, Russia, and the United States are certainly all spending twice as much on defence as before the War—Germany, it is estimated, about six times more; and Italy's defence expenditure has also increased very substantially. While the preparations for the next war have for the time relieved the slump which was the direct consequence of the last, the same causes produce the same effects, and it is almost impossible to avoid the fear that the near future will see another period of economic stringency which may drive discredited rulers to desperate courses. (W. T. WE.)



THE ARMY'S GIANT BOMBERS salute aviation's birthplace. A formation of B-17 Army Boeing Flying Fortresses, in flight above the Wright Memorial at Kitty Hawk, North Carolina

<sup>1</sup>These figures are taken for about 60 countries. A few minor countries are omitted.

<sup>2</sup>See *Foreign Policy Reports*, Feb. 15, 1937: "The Rising Tide of Armament," by William T. Stone and Helen Fisher (published by the Foreign Policy Association, Inc.).



**World Commerce:** see EXPORTS AND IMPORTS.

**World Court:** see PERMANENT COURT OF INTERNATIONAL JUSTICE.

**Wrestling.** Amateur wrestling in the United States showed further improvement at the colleges and athletic clubs in 1937. In 1938 the amateur championships will be fifty years old. They were held for the first time in 1888 and annually thereafter except 1892 and 1898. However, two meets were held in 1889, which brings the total to fifty.

The A.A.U. national championships at Baltimore did not have as large an entry list in 1937 as in those years when the nearness of approaching Olympics served as a magnet, but competition was keen and every championship was closely contested. Title winners in the various classes represented seven different States from New England to the Pacific coast. At the national collegiate meet at Terre Haute, Ind., Oklahoma agricultural and mechanical college won the team championship, securing four individual titles and ranking second or third in three of the other four weight divisions.

Professional wrestling had one of the most unsuccessful years in its history, with attendances far below normal. This falling off was attributed to constant squabbles among promoters, and unwillingness or inability to meet financial demands, which caused some of the headliners to seek engagements in countries where the inducements were more attractive. (J. B. P.)

**Wyoming,** a Rocky mountain State, was admitted to the United States July 10, 1890, as the forty-fourth State. Popularly known as the "Equality State," it has a land area of 97,548 square miles. According to the 1930 U.S. census, it had a population of 225,565; while a Census Bureau estimate of July 1, 1937, placed the population at 235,000. Its capital city, Cheyenne, had (1930) a population of 17,361, and Casper, another large city, 16,619. Of the State's 1930 population, 70,000 or 31% were urban; 214,067 whites; 1,250 negroes; 10,248 other races; 194,469 native born, and 19,658 foreign born. Wyoming is peculiarly situated on the backbone of the continent, where plains and mountains meet, and for more than a century has been the gateway to the west and north-west.

**History.**—Elective State officials in 1937 were governor, Leslie A. Miller; secretary of State, Lester C. Hunt; State auditor, William Jack; State treasurer, J. Kirk Baldwin; and superintendent of public instruction, Jack R. Gage.

**Education.**—Educational facilities in Wyoming serve the needs of the younger generation not alone in the grade and high schools, but in the higher branch of education which may be found at the State university and agricultural college at Laramie. The university enrolment for the year 1937-38 included 1,840 full-time and 985 part-time students. There was a faculty of 139. Elementary and high school attendance exceeded 55,000 with nearly 3,000 teachers.

**Agriculture, Manufacturing, Mining.**—Despite the sparse settlement of the State, its industrial development has been extremely diversified. Production figures reached \$45,289,546 in 1935, of which \$24,653,827 represented petroleum refining. The State's agricultural development has been chiefly in live stock, with the live stock income for 1935 standing at \$32,330,000. Products of the soil, however, through intensive crop measures have produced and continued to produce the highest quality of sugar-beets, potatoes, grains and other commodities, the 1,463,000 acres in 1936 producing crops valued at \$21,740,000.

Farm products such as beef, dairy products, mutton and wool, poultry and eggs have a leading position in the State. Oil and coal have been the chief minerals of the State, providing employ-

ment for thousands of its citizens. Of the State's mineral production of \$30,669,658 in 1935; \$11,730,000 was petroleum and \$11,127,000 was coal.

Recreationally, Wyoming is outstanding. Great strides have been made during the past dozen years by Federal, State and private interests in the development of wild life and recreational values, not alone for the benefit and enjoyment of its local population, but for the thousands of citizens of the nation. Climate and environment are particularly suited to worn minds and for the reinvigoration of those seeking relief from bodily ills.



LESLIE A. MILLER, governor of Wyoming

During 1937 the State gave serious attention to the development of its land and water resources and a program for its gradual and ultimate use has been perfected so that the greatest amount of benefit may accrue. This contemplates a long-range program which in the end will provide homes and subsistence for an increasingly larger population, the creation of additional capital wealth and a levelling and diminishing tax structure so that the governmental burden shall fall with less penalty upon all.

Highway development in Wyoming has not lagged behind other States. During the past 20 years \$50,000,000 has been expended for construction of highways alone, and this figure does not take into consideration maintenance costs. During the calendar year 1937 approximately \$6,000,000 went into highway construction. At the present time there are 3,700 miles of State Highways of which about 3,000 miles have been paved with oil. (L. A. M.)

**X-Ray.** The diagnostic value of the X-rays has been increased in recent years by improvements in apparatus and discovery of new methods of examination.

The rotating anode tube has gradually been perfected and is now coming into general use. Due to the small focal point of these tubes, roentgenograms may now be obtained with much sharper and richer detail than was formerly possible. They also permit use of currents of higher milliamperage with consequent reduction in time of exposure. This is of great value in X-ray examinations of children and of organs or parts which cannot be immobilized.

The kymograph is an instrument which is now coming into general use as an aid to diagnosis. Kymography consists in making roentgenograms of moving parts or organs, such as the heart, stomach or diaphragm through a grid consisting of lead strips separated from each other by equal distances. The roentgenogram is made while the grid is moving at right angles to the long axis of the lead strips and reveals the nature and degree of movement of the heart or other organ under examination. It is especially valuable in differential diagnosis of diseases of the heart and other structures within the chest.

Tomography is a method of roentgenography which results in producing a distinct picture of a selected layer of the body. It is accomplished by means of co-ordinated movements of the X-ray tube and the film carrier around the part of the body under examination.

**Therapy.**—That many cases of cancer can be cured by means of the X-rays and radium is now established. It has been known







"ENDEAVOUR II" (left), English challenger, and "RANGER" (right), U. S. cup defender, which won the 1937 yacht races for the America's Cup. The picture is from the third race in the series off Newport, Rhode Island

breezes, the "Lecky," from San Diego, Cal., sailed by Milton Wegeforth, won with 164 points; the German entry "Pimm," owned by Walter von Hutschler being second with 159 points. "Pimm" won four of the five races and only lost the championship by being damaged in the first race. "Pimm" used an ingenious arrangement for flexing her very light mast and bending her boom, which resulted in her being able to flatten her sail going to windward and yet, by straightening the mast and bending the boom, horizontally, giving it plenty of draft when off the wind. The result has led to much experimenting in the class to get the same effect on the American boats.

**A New Class.**—Among the new classes of small racing yachts to make an appearance in 1937, the most important was the International One-Design Class, sailed during the summer on Long Island Sound. These little boats were designed by Bjarne Aas and were built in Norway. They are 33'2" long over all; 21'5" on the water; 6'9" beam; 5'4" draft and carry 416 sq.ft. of sail. Twenty-five were originally ordered, and the class has since been adopted at Northeast Harbor, Maine, and at Bermuda.

**Long-Distance Racing.**—In the long-distance and ocean-racing events, there were two outstanding races. These were the 475-mile run from New London to Gibson island, in which Walter Rothschild's "Avanti" won in a fleet of 35 starters, and H. P. Wells' "Golden Eye" took the honours in the small B Class; and the annual Chicago-Mackinac Race of the Chicago Yacht Club. "Avanti," a Stephens-designed yawl, was one of the successful boats whose model was given a tank test before building. In the latter event the fleet ran into a gale which scattered the yachts badly so that only a few finished. The winners were R. P. Benedict's "Southern Cross," Class A; N. Rubinkam's "Rubaiyat," Class B, both designed by John Alden; and the "Revenge," Walliser-Griffin, in the racing division. (H. L. St.)

**Great Britain and Europe.**—With racing interest centred largely on the America's Cup, 1937 has been a year of promise rather than performance in Europe. Without its most interesting vessels, the big (J) class did not race in British waters, the 12-metre class heading the program, as it will probably continue to do, although the effort, still unsuccessful, to evolve a 65-foot (L) class, less expensive than the (J) boats, attracted great attention. In Britain the racing was greatly influenced by the Coronation International Regatta at Torbay which lasted a fortnight, and which collected no fewer than 312 entries, the biggest known in the history of British yachting, divided into 17 classes. The weather was excellent, and most of the racing very interesting; only the number of overseas visitors was rather disappointing. The waning popularity of the international metre classes is conspicuous, largely through cost, but an important step was



made by the International Yacht Racing Union laying down a definite minimum beam restriction, otherwise the rapid tendency, especially in Scandinavia, towards the "plank-on-edge" could only have killed the international rule in time. The minima laid down are lenient, but the policy is sound. The British tendency is towards numerous local classes, either restricted or one-design, and there is a vogue for foreign designers, but many of these classes will probably be very short-lived. The programs in 1937 offered plenty of handicap racing, but there is a demand for better general organization on that side.

Off-shore or "ocean" racing continues to attract numerous yachtsmen, and the year saw a number of excellent contests. This form of racing has produced many very interesting yachts in recent years, and has permitted a number of the younger architects, whose names were almost unknown a few years ago, to make high reputations. Very conspicuous among the new fast cruising yachts is the Clyde-built ketch "Thendara," 145 tons, which aroused unbounded admiration when she made her début at Torbay, and showed a fine turn of speed in the handicap races.

During 1937 building was checked by the rapid rise in building prices, which has undoubtedly prevented the placing of many orders, although the enthusiasm for the fast cruiser, and the scope that it gives to both builder and yachtsman, has caused several contracts to be placed. Apart from these off-shore and class racers, most of the new yachts have been full-powered motor vessels of various types, among the most interesting being Mr. Sopwith's "Philante," of over 1,600 tons displacement, and the inland waterway yacht subscribed for by the people of Holland as a wedding present for Princess Juliana. (F. C. Bo.)

## Yale University.

President James Rowland Angell's 16-year term as President of Yale University closed at Commencement, June 23, 1937, and his successor, Charles Seymour of the Yale Class of 1908, elected Feb. 13, was installed on Oct. 8. Yale's new president, a graduate of Cambridge University, England, in 1904, historian of the World War and an



American delegate to the Peace Conference in 1919, had been provost and Sterling professor of history and master of Berkeley College, and actively at the forefront of the university's physical and intellectual development since 1921.

In June Dean Edgar S. Furniss of the Graduate School became provost; Dean Clarence W. Mendel of Yale College retired, Professor George H. Nettleton of the department of English taking his place for one year; Dean Percy T. Walden of freshman year retired, Professor William R. Longley of the department of mathematics becoming acting freshman dean. Professor Samuel B. Hemingway of the department of English was appointed master of Berkeley College.

During the year three large gifts were announced: the anonymous Jane Coffin Childs Memorial Fund for Medical Research, the amount of which, unannounced, is said to be the largest single gift ever made to Yale for work in the field of science; the bequest of \$380,000 by the late George St. John Sheffield, B.A., 1863, for general endowment of the Sheffield Scientific School, and that of the late Noyes B. Clark, Ph.B., 1891, of upwards of \$500,000 to aid poor students who without such help could not enter the university. The Yale Alumni Board completed new plans, including graduate publications; and the Class Secretaries Association changed its system to meet the needs of the nine residential colleges, combining all undergraduates into one class for secretarial purposes.

In 1921, when President James Rowland Angell came to Yale University, the university's endowments amounted to \$25,000,000. As President Charles Semour succeeded, the endowments, including the great foundations received since 1921, totalled approximately \$105,000,000. (E. Ov.)

**Yemen:** see ARABIA.

## Young Men's Christian Association.

The world's alliance of Young Men's Christian Associations was formed in 1855. It is composed of 36 autonomous national alliances and associations in 28 other countries affiliated informally. The headquarters of its world's committee and executive are located at Geneva, Switzerland. Its 21st world's conference met in Mysore, India, in Jan. 1937. Representatives from Belgium, England, France, Germany, Holland, Switzerland and the United States formed the original alliance in 1855. Reports from all countries (Jan. 1, 1937) showed 10,308 associations with 1,761,456 members, predominantly young men and boys. A body of secretaries or professional workers numbering 5,546 was reported, two-thirds of them employed in the United States. Buildings owned and occupied numbered 1,664. Concerns of immediate importance to the alliance include the contribution of Christian youth to a Christian world order, public questions affecting the place and opportunity of youth and the family in the social order, and the emergence of a universal Christian community. Publications: *Youth in the New World*, *Flaming Milestone*, *World's Youth*, a quarterly journal, are published by the world's committee, Y.M.C.A., Geneva; *Y.M.C.A. Year Book* for 1937, National Council, Y.M.C.A., New York. (O. E. P.)

**Young Men's Hebrew Association and Young Women's Hebrew Association:** see JEWISH WELFARE BOARD.

## Young Women's Christian Association.

During 1937, the World's Young Women's Christian Association with its headquarters in Geneva carried on its usual program of advisory service and co-ordination of the work of its

constituent associations in 52 countries, which reach a total membership of more than 1,000,000 women and girls.

Two executive committees were held in Geneva, with representatives of at least 15 nationalities. Following the regular plan adopted in 1934, two significant regional conferences were held: the North America Area Conference, April 28-30, in Toronto, including Canada, U.S., Mexico, Newfoundland, with Java as an invited guest; and the Conference of northern Europe at Nyborg Strand, Denmark, July 24-31, with nine countries represented.

Three new areas (Iran, Siam, and Fiji) for development of the Young Women's Christian Association were given special consideration, as the result of special requests from these areas for the advice and help of the World's Y.W.C.A.

Representatives from the World's Y.W.C.A. attended the following conferences: the Far Eastern Conference on Traffic in Women and Children in Java, Feb. 1937, under the League of Nations; the Pan-Pacific Women's Conference in Vancouver, Canada, July 12-24; the Conference on "Church, Community, and State" at Oxford, England, July 12-26; and the World Conference on Faith and Order at Edinburgh, Aug. 3-18.

Further progress was made in the two special subjects of study carried on through the World's Y.W.C.A.—The Christian Emphasis, and the Place and Contribution of Women. The joint work of the World's Y.M.C.A. and World's Y.W.C.A. was also a subject of study by a special commission.

The past year realized a significant advance in bringing the associations of the East and West into closer relationship through the direct collaboration of the general secretary of the Y.W.C.A. in Tokyo for six months on the staff of the World's Y.W.C.A. The year as a whole was significant for the world movement because of progress along many lines towards the goal of a more closely integrated world movement. (R. F. Wo.)

**Youth Movements** were unknown before the 20th century. They are an expression of the conscious acceleration of the dynamic changes of the contemporary world, of the widening rift in experience and feeling between generations. As its consequence youth revolts against the guidance by the older generation, organizes to find its own new forms of life and proclaims its own ideals as opposed to or at least different from those of the parental home and the school.

Youth movements originated before the World War in Germany. The Wandervogel was a non-political organization aiming at a life in closer contact with nature and cultivating folk-songs, folk-dances, and other popular forms of a new artistic feeling. After the World War, in the newly arisen totalitarian States, in the Soviet Union, in Fascist Italy, in Nazi Germany, youth was organized on a "totalitarian" basis, denying it the spontaneous and autonomous character which is the essence of true youth movements. In these countries the youth organizations became the most important instrument for the indoctrination of the rising generation by the official party leadership and formed the reserves for the party. In the Soviet Union the two youth organizations, the Comsomols (Communist League of Youth) for those over 15 years of age and the Young Pioneers who range from 10 to 16 years of age are built upon a principle of selection, to be the "vanguard" in the construction of the new order. In the Fascist States, the youth organizations are all-inclusive, and all children are invited or forced to join. In Germany boys and girls formed the Hitler Jugend and the Bund Deutscher Maedel. Italian Fascism glorified youth from the beginning in its official song, *Giovinezza*. It organized all children from the age of six in strictly militaristic organizations, the backbone of which formed the Balilla, with the Wolf-Cubs for the younger and the Avanguardisti for the older children. Youth serves here as a



simple instrument for military and party aims.

True youth movements are confined today, 1937, to the democratic countries which allow them freedom of self-expression. The greater political and economic stability in these countries has not favoured the growth of important youth movements. The progressive social structure of democracy seemed to allow sufficient scope for the expression and expansion of youth without leading to its revolt. Only in the United States the growth of a youth movement was hastened by the economic depression and the social crisis of the early '30s.

In 1934 the American Youth Congress was founded in New York as "a permanent federation of youth organizations formed for the purpose of initiating, co-ordinating, and unifying the activities of the youth organizations of America in relation to their common problems." It held its fourth annual meeting in July 1937 at Milwaukee, Wis. It proposed to the 75th Congress an American Youth bill for better educational opportunities. Other important American youth movements are the National Student Federation of America, founded in 1925, the American Student Union founded in 1935, and the Christian Youth Council of North America which since 1934 represents "Christian youth building a new world." The American Student Union has introduced a new form of "strike" and was responsible in April 1937 for the peace "strike" which united about one million students in protest against war.

The youth movement in the United States has emphasized more and more concrete problems of the adjustment of youth to changing economic and social conditions. Educational aid, vocational training, work programs, social legislation, leisure-time opportunities are some of the problems envisaged. The Government has institutionalized certain attempts to solve some of these problems. The National Youth Administration assisted students in higher education, gave occasional training and guidance, and employed in April 1937 about 192,000 young people on varied work projects. The Civilian Conservation Corps has been an interesting adaptation of the labour service idea to American conditions. On June 28, 1937, the CCC was extended by Congress for three years as part of a training program for youth, after President Roosevelt had recommended its being made a permanent agency.

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**Yugoslavia**, a kingdom of S.E. Europe and member of the League of Nations. Bounded W. by the Adriatic, N.W. by Italy and Austria, N. by Hungary, N.E. by Rumania, E. by Bulgaria, S. by Greece, and S.E. by Albania. Ruler, King Peter II (born 1923), who succeeded on the murder of his father, the late King Alexander I, Oct. 9, 1934. Flag, blue, white, and red, flown horizontally. During his minority the King is represented by a Regency consisting of H.R.H. Prince Paul, M. R. Stanković, and M. I. Perović.

**Area and Population.**—The area is 95,558 square miles. Pop. (1936), 15,174,000. The population in 1921 was 12,017,323. The Serbs and Croats were then given officially as numbering 8,946,884, which probably included some 3,500,000 Croats and nearly half a million Bulgars and "Macedonians": Slovenes, 1,024,761; Germans, 573,472; Magyars, 467,650; Albanians, 441,740. In 1931 the adherents of the Serbian Orthodox Church (Serbs, Bulgars, and Macedonians) numbered 6,785,501; Roman Catholics (Croats, Slovenes, Germans, Magyars, Bunjevaci) 5,217,910; Greek Catholics (Serb and Rumanian) 44,608; Protestants, 231,169; Moslems, 1,561,166; Jews, 63,405. Education is compulsory and State controlled.

The chief towns, with their populations, are: Belgrade (238,-

775), Zagreb (185,581), Subotica (100,058), Sarajevo (78,123), Skoplie (68,616), Novi Sad (63,985), and Ljubljana (59,765).

**History.**—The late King Alexander abolished the old historic divisions of which Yugoslavia had been composed (Serbia, Croatia, Slovenia, Bosnia, and Herzegovina, Dalmatia, Montenegro, with the Voivodina and Macedonia), and organized the country into Banovinas named after the chief rivers (Dravska, Savska, Vrbaska, Primorska, Drinska, Zetska, Dunavska, Moravska, Vardarska, with the capital city, Belgrade). He also abolished the former Constitution and political parties. In 1931 a new Constitution was introduced, vesting legislative power in the King, the Senate, and the Chamber of Deputies. At first only a single Government party was allowed to exist. An opposition is now permitted, but within very restricted limits, and regional or confessional parties are still prohibited. There is much opposition to this system, led by the Croats. In 1937, although the principles were maintained, the system was slightly relaxed, and the premier Dr. Stoyadinović, held various conversations with M. Maček, the Croat leader. On Sept. 15 the leaders of the three chief Serbian "shadow parties" (Radicals, Democrats, and Agrarians) met at Zagreb and reached an agreement with M. Maček's Croat Peasant party to collaborate in working for free elections under a Cabinet of National Concentration for a Constituent Assembly to adopt a new Constitution. They urged the Regency to appoint a cabinet of "the parties enjoying the confidence of the people." A minor reconstruction of the cabinet followed; but the internal question is clearly still far from solution.

Much agitation was caused by the Government's bill for a Concordat with the Holy See. The Holy Synod of the Orthodox Church protested violently against the alleged privileged position destined for the Roman Catholic Church, and excommunicated the members of the Government and Deputies voting for the bill. There was severe rioting. To make things worse, the head of the Serbian Orthodox Church, the Patriarch Varnava, died at the height of the excitement, and was refused a State funeral. The House of Deputies passed the bill by 167 votes to 127 (July 19), but the Government subsequently withdrew the bill.

Yugoslavia greatly strengthened her international situation during 1937. The Treaty of Friendship with Bulgaria, signed on Jan. 24, secured her eastern flank, and inaugurated an era of genuine good feeling. On March 26, a political and a commercial treaty were signed with Italy. The two countries undertook to respect their common frontiers on land and in the Adriatic. If either were attacked without provocation by one or more Powers, the other would abstain from action calculated to help the aggressor. Each would inform the other of measures taken to safeguard themselves in international crises. They agreed not to resort to war as an instrument of their national policies, and to settle their differences by peaceful means. They would not tolerate on their territories activities directed against each other's territorial integrity or political independence, or calculated to disturb their existing relations. It was understood that they exchanged assurances to respect the integrity of Albania, and not to seek exclusive advantages in that country. Under the trade agreement, Yugoslavia got increased exports to Italy, participation in the benefits of the Rome protocols, and an active trade balance with Italy.

While remaining faithful to the Little Entente and Balkan Entente, Yugoslavia also greatly improved her relations with Hungary. She was visited in turn by German and French statesmen. Opinion in the country seemed much divided on the advantages or otherwise of a close approach to the "Rome-Berlin axis," and no further commitments appear to have been undertaken.



**Trade, Communications, Finance.**—The basis of Yugoslavia's economy remains her agriculture. Maize, wheat, and fruit (especially plums) are largely cultivated. Industry grows slowly; but mining, especially of coal, iron, copper ore, and lead, is becoming important. Imports during 1936 were valued at 4,077 million dinars, and exports at 4,376 million dinars. The figures, both for imports and exports, have risen steadily during the last five years. The balance of trade has been active since 1932. The chief imports come from Germany, followed by Czechoslovakia, Austria, Great Britain, and the United States. Exports go to Germany, Austria, Czechoslovakia, Great Britain, and Italy. The currency is the dinar, nominally equal to 1.7612 gold cents. In 1936 this averaged 77.2% of its nominal value. The budget estimates for 1936-37 were balanced at 10,323.5 million dinars, and for 1937-38 at 10,949 million dinars.

**Defence.**—Military service is compulsory. The army budgetary effectives in 1936-37 numbered 8,969 officers and 107,850 other ranks. The strength in mobilization was stated in 1937 to be well over 1,000,000 men. There is a small navy and an effective air force. (See also BALKAN ENTENTE; LITTLE ENTENTE.)

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**Yukon Territory,** the most westerly of the northern territories of Canada, was created a separate territory in June 1898, by Act of Parliament (the Yukon Act). It has a total area of 207,076 sq.mi., and a population of 4,000 (estimate, Dominion Bureau of Statistics, 1935). At the height of the gold mining boom (1901) the population was 27,219. The seat of government is Dawson. By amending legislation provision has been made for a local Government composed of a chief executive, the controller, and an elective legislative council of these members with a three year tenure of office. The controller administers the Government of the territory under instructions from the governor-general-in-council.

Mining is the chief industry, closely followed by trapping, and some fishing. In 1936 the Yukon (together with the North-west territories) produced 50,344 fine ounces of gold, 1,053,733 of silver, and over 40,000 fur pelts. On Oct. 25, 1937 Mr. T. D. Pattullo, premier of British Columbia announced his intention of obtaining the permission of the Dominion Government to extend the boundaries of the province to include the rich resources of the Yukon. The residents have objected, but the decision, when it is made, rests entirely with the Dominion Government.

(J. T. C.)

**Zachrisson, Robert Eugene** (1880-1937), Swedish professor of English. He became professor of English at Upsala university in 1921, and is best known as the inventor in 1930 of "Anglic" or "English in eezy speling," an attempt to overcome the obstacle put by its illogical spelling in the way of English becoming a widely international language. He published many works on English literary and linguistic subjects, such as Shakespearian pronunciation, and modern English philosophy as reflected in literature. He died at Ronneby, South Sweden, in July 1937.

**Zanzibar.** A British protectorate, comprising the islands of Zanzibar, Pemba, and adjacent small islands off the coast of Tanganyika territory. It is ruled by the sultan, H. H. Seyyid Sir Khalifa bin Harub, aided by a British resident, J. Hathorn Hall, C.M.G., D.S.O. The capital is the City of Zanzibar. The sultan was taken ill and removed to the hospital after the opening of the legislature on Dec. 14, 1937.

Zanzibar has an area of 640 sq.mi., and a population of 137,-

741. Pemba, 25mi. to the north, has area 380 sq.mi., and population 97,687. The religion is Mohammedan.

**Trade and Communications.**—There is a weekly mail and a twice weekly passenger air service. The chief export is cloves (23,036,971lbs. exported in 1936). The Government's attempt to limit Indian middlemen's profits in the clove industry led to an Indian boycott of Zanzibar cloves, and a drop in the receipts from the clove export duty to £30,000. It was stated in July 1937, that an agreement in this matter had been reached with the Indian Government. Copra was exported to the value of £144,347. Exports and imports for 1936 amounted to £1,037,000 and £871,000, respectively. East African Currency Board notes and coin became legal tender from Jan. 1, 1936, replacing the rupee. Taxation is by hut tax and estate and stamp duties. Revenue and expenditure for 1936 were £476,000 and £446,000 respectively.

**Zeppelins:** see AVIATION, CIVIL: *Airships*.

**Zinc.** Of the current world zinc output, one-half of the producing countries account for 90% of the total, and the other half for 10%. The details for the major countries are shown in the accompanying table.

World Production of Zinc  
(In thousands of metric tons)

	1929	1932	1934	1935	1936
Australia . . . . .	50.8	53.7	54.3	67.9	70.6
Belgium . . . . .	197.9	96.3	174.9	181.7	197.7
Canada . . . . .	78.1	78.2	122.4	135.3	137.6
France . . . . .	91.6	49.3	51.2	51.5	53.6
Germany . . . . .	102.0	42.0	72.9	124.2	136.4
Norway . . . . .	6.4	40.1	45.5	46.1	45.5
Poland . . . . .	160.0	85.0	93.0	85.0	95.4
U.S.S.R. . . . .	3.4	13.7	27.2	46.2	66.0
United States . . . .	573.0	193.7	332.9	391.5	474.6
United Kingdom . . .	59.2	27.3	52.0	61.4	61.8
World Total . . . .	1,472.8	789.9	1,183.9	1,348.6	1,497.1
Ex U.S. . . . .	899.8	596.2	851.1	957.2	1,022.5

A depression decline of 46% in world output has been completely regained, with 1936 slightly surpassing 1929 in total output, but the trend has differed considerably in different countries; the United States production declined by 64%, against only 34% for the rest of the world and had recovered in 1936 to only 83% of the 1929 high, while other production had almost regained its former level by 1934, and by 1936 had surpassed it by 14%. The chief factor contributing to this was the increased outputs in Australia, Canada, Germany, Norway, and the Soviet Union, and a smaller gain in the United Kingdom, although these were offset partially by declines in France and Poland; among the minor producers the gains and losses roughly balanced. World production during the first nine months of 1937 was at the rate of 1,696,000 tons, an increase of 13% over 1936; Canadian production increased about 10% over 1936, to 165,000 tons; and the United States about 12%, to about 535,000 tons.

For a number of years past, the zinc industry of the United States has been practically self-contained, imports and exports being negligibly small, the former averaging about 2% of production, and the latter even less; but late in 1937 imports increased decidedly, to meet a shortage in supply due largely to the effect of drought on the power supply of the electrolytic plants in the North-west, and will probably total some 35,000-40,000 tons by the end of the year. Australia, Belgium, Canada, Norway and Poland export a large surplus production, but in the case of Belgium, Norway and Poland a large proportion of the output is made from imported ores; France, Germany, Italy, Japan, and the United Kingdom import both ore and metal to



meet a considerable percentage of the demand.

Technological developments in the production of zinc centre largely in the expansion of the recently developed vertical retort smelting and of electrolytic recovery plants, while in utilization the expansion of the applications of die casting and electro-galvanizing are the chief points of interest. Extensions of production capacity were made during 1937 in the electrolytic zinc plants at Kellogg, Idaho; Trail, B.C.; Flin Flon, Man.; and Magdeburg, Germany. (See also METALLURGY.) (G. A. Ro.)

**Zionism**, the movement first set on foot by Theodor Herzl, of Vienna, in 1897, at a World Jewish Congress at Basle for the re-establishment of a Jewish national state in Palestine. After abortive attempts had been made to negotiate with Turkey for a charter for Jewish colonization in Palestine, and the suggestion made by Britain for the establishment of a Jewish colony in East Africa had been refused, Zionism entered the field of practical politics with the "Balfour Declaration" of 1917, in favour of the setting-up of a national home for the Jewish people in the Holy Land on the conclusion of the World War.

The Zionist Organization, presided over by Dr. Chaim Weizmann, is an international body divided into national federations, of which at present about 45 exist in various parts of the world, and holds a biennial congress for the regulation of its affairs. At the 20th congress, held in Zürich from Aug. 3 to 11, 1937, and attended by 500 delegates, the proposals for the partition of Palestine were the principal subject of discussion. The president, while rejecting the proposals for partition put forward by the Royal Commission (see PALESTINE), advised the congress not necessarily to refuse partition in some form as a possible solution of the problem, and the congress, by 300 votes to 158, resolved, while rejecting the scheme, to empower its executive to negotiate with the British Government with a view to clarifying the latter's terms for the establishment of a Jewish state in Palestine. Previous declarations of the desire of the Jewish people to reach a peaceful settlement with the Palestinian Arabs, based on mutual recognition of their respective rights, were reaffirmed by the congress. This decision was supported a few days later by the Jewish Agency for Palestine, an official organization which includes both Zionist and non-Zionist Jews, represents general Jewish interests in the country in negotiations with the British Government, and, through its administrative committee, controls the character of Jewish immigration into Palestine, proportions of labour immigration certificates being assigned to the several Jewish parties at each Zionist congress as a guide to the agency.

At the annual conference of British Zionists held on May 23 strong criticism was expressed of the way in which the Palestinian mandate had been handled by Britain, which, said one speaker, had since 1922 merely interpreted the mandate instead of carrying it out. The increasing Arab opposition to Zionist ideals was strongly voiced at the Pan-Arab congress at Bloudan, Syria, in September, the president declaring that Zionism was a cancer in the body of the Arab countries which must be removed, or it would cause the death of the body, and that unless Britain ceased to support Zionism she must no longer count on Arab support in case of need.

The Zionists' main subjects of complaint against British mandatory administration in Palestine, as expressed at their conferences and in the statements of their leaders, are the failure to introduce a satisfactory system of land distribution; the toleration of subversive activities on the part of Islamic organizations; dilatoriness in dealing with Jewish proposals calling for executive action, and consequent obstruction in the establishment of the national home; delay and inefficiency in the settlement of legal suits and criminal charges; the restriction of the activities of

Jewish municipalities; the display by British officials of pro-Arab tendencies; and general failure to ensure public security. (See also ANTI-SEMITISM; ARABIA.)

**Zoological Gardens.** Recent changes in the design of zoological gardens are notable, and the principle of viewing animals across moats instead of through bars has been extensively put into practice. During 1937 there were many additions and improvements to record.

**United States.**—Recent exhibits at the Zoological park, New York, included a Masai giraffe, a pair of secretary birds, an Asiga gazelle antelope from Russia, and a wattled crane from East Africa. Dr. Raymond Ditmars, curator of mammals and reptiles, went to Panama to visit the Madden dam area to investigate the returning growth of the jungle over land which was cleared, and to speak on vampire bats, to the Panama Natural History Society. Dr. William Beebe returned from his 25th expedition to study the marine life of Bermuda and set out for his 26th expedition. Dr. C. R. Schroeder, veterinarian and pathologist at San Diego, California, was appointed veterinarian of the New York Zoological park, succeeding Dr. Noback, who died in January. The society accepted the management of the "Permanent Wild Life Fund" of \$130,000 left it by Dr. Hornaday, a former director of the park who died in April. The National Zoological park, Washington, opened a new wing to the bird house. The cages have glass fronts and sky-lights to allow the birds direct sunshine. A panorama cage is refrigerated for Arctic birds. The director spent five months in the East Indies collecting strange animals. At the Chicago Zoo, the rare giant panda, Su-Lin, attracted a great deal of amused attention; the air in the lion house is changed every four minutes and oxygen is supplied to the delicate young chimpanzees. Beaver in the Philadelphia zoo have a lake to allow them to build.

**Great Britain and Northern Ireland.**—The maharajah of Bharnagar gave £10,000 towards the construction of a "King George VI Coronation Elephant House" at the Zoological Society's garden in London. Lord Snell opened the studio of animal art, where classes are arranged with animals as models. Mr. D. Seth-Smith gave the first television broadcast with the aid of small animals from the zoo. Over 500,000 people visited Whipnade park during the season. Dudley zoo, the most up-to-date in the country, was opened by Lord Dudley; it included animals from the Oxford zoo, now closed. Lord Salvesen opened a tiger quarry at the Edinburgh zoo in April. At Glasgow a society was formed to organize a zoological park. Chessington zoo opened a new elephant house and a monkey hill. Chester made a new circular enclosure for Malayan bears, built on the open-air principle, and new lion accommodation was opened by Lord Leverhulme. At Liverpool a new zebra paddock was opened, and at the Manchester zoo the old ape-house was turned into a cubs' club for young lions and tigers. At Bristol a male giraffe calf was born and the zoo acquired a young grey kangaroo and wallabies. At Belfast a new ape-house was constructed from the old sick-bay.

**Europe.**—The Copenhagen zoo is replacing the out-of-date housing by modern. Frankfurt received a giant armadillo from South America. Munich opened a new and particularly good ape-house and parrots were placed on stands in front of the elephant pens. At Nuremburg the zoo ground is required for a parade ground and the zoo will be moved out into the country. An interesting experiment is being carried out of breeding back to the extinct wild ox of Europe. The polar bears at Leipzig have diving boards of green plate glass, which give an illusion of ice, with water slipping under. Professor Manteifel, director of the Moscow zoo found that hundreds of small Australian parrots refused to nest until dummy nests were provided. (V. R.)



## Zoology.

A review of the genetics of the lepidoptera has been given by Ford, in the course of which he develops a theory in explanation of the phenomenon known as "industrial melanism"; that is, the supersession in industrial areas of black varieties of lepidoptera for those of other colours. It has previously been imagined that the melanism was due either to selection favouring black mutants, or to the induction of black mutations by the manganese and lead salts which, in such areas, cover the leaves of the food-plants. It is, however, now considered unlikely that melanism can be induced in this way, and Ford suggests that the origin of melanic varieties is due to the selection of genes conferring physiological advantages combined with a black colour. This accounts for the fact that melanic forms show, in general, a higher viability, and suggests that melanic varieties will become established wherever their survival is not directly handicapped by their black colour, and particularly, therefore, in industrial areas. The interest of the phenomenon is thereby shifted from the problem of the origin of melanic varieties to the question why these hardier forms do not supplant their non-melanic relatives throughout the range of the species. The answer appears to be that outside manufacturing areas the melanic forms in spite of their physiological advantages are handicapped by their blackness and kept down by counter-selection for colour.

Great advances in knowledge of the phenomena of reproduction in calcareous sponges have been made by Duboscq and Tuzet. With regard to the origin of the eggs, it seems more than probable that the oögonia are derived from choanocytes which lose their flagella and collars and desert the flagellated chambers for the underlying mesenchyme. The growth of the oöcyte is accomplished with the help of nutritive cells, the "dolly-cell" and the "satellite," which are likewise immigrated choanocytes. The sperm which has made its way into a flagellated chamber enters a choanocyte which then withdraws and carries the sperm to the egg which is then fertilized.

Cleavage leads to the formation of a "stomoblastula": a single-layered blastula with a hole through which yet more immigrated choanocytes constantly pass to feed the embryo. The stomoblastula has four radially situated sense-organs, and its cells develop flagella on their internal surface, projecting into the central cavity. A remarkable event then occurs, which has been overlooked by all previous workers. The stomoblastula literally turns itself inside out, and reverses its surfaces. The flagella are then on the external surface of the embryo, which soon becomes converted into the familiar amphiblastula larva, and swims away. Thus, in addition to the well-known reversal of the layers which takes place during metamorphosis, these sponges undergo a first reversal during the embryonic stage.

A reinvestigation of the process of the gastrulation in vertebrates with heavily-yolked eggs has led Pasteels to conclusions of considerable importance. Gastrulation is the combined result of a number of specific mass-movements of different parts of the blastula: invagination, convergence, and expansion. The time-relations of these movements differ. In the Anamnia, invagination and convergence start in the dorsal region and progressively affect the lateral and ventral regions; expansion occurs at the same time. In reptiles, invagination and convergence take place simultaneously all round the blastopore, but expansion occurs relatively later. In birds, invagination and convergence start in the ventral region and progressively affect the lateral and dorsal regions, and expansion does not begin until invagination has finished. In addition, in birds, there are combined movements of the upper and lower layers of the blastoderm. By assuming variations in these constituent processes of gastrulation, Pasteels is able to interpret

the primitive streak and the retreat of Hensen's node. It is also worth noticing that gastrulation cannot be defined statically in terms of the shapes of gastrulae of different organisms, for there is too much disagreement between them; gastrulation can only be defined kinetically in terms of the above-mentioned mass-movements, the result of whose activities is the shifting into position of the materials of the future internal organs.

The outstanding advances in the study of embryology resulting from Spemann's discovery of the power of a certain region (the "organizer") of amphibian embryos to induce the formation of various essential structures, have been extended to birds and mammals by Waddington. He has succeeded in pressing the analysis of the phenomenon further by distinguishing between "evocation," the process of induction of a structure, say the spinal cord, and "individuation," which is the determination of the regional characters of the structure induced in such a way that they conform to the normal structure of an embryo, for example, the modification of the front end of the spinal cord into a brain. "Individuation" has, so far, been obtained only as the result of the activities of living tissues; "evocation" has, however, been shown to be due to the activity of chemical substances, probably of a sterol nature combined with glycogen and protein. Hartley, Waddington, and Needham have obtained what appear to be examples of evocation without individuation, by subjecting isolated pieces of epidermis to the action of glycogen and its associated substances.

The lateral line organs of aquatic vertebrates have long been objects of interest from many points of view. In development, structure, and innervation, they are closely related to the auditory vesicles. As regards their function, Sand has now been able to show that the lateral line sense organs have the property of spontaneous discharge of impulses, and that these impulses are inhibited or augmented according as fluid flows in one direction or the other through the lateral line canal. It is interesting to recall that, as Loewenstein and Sand have shown, the sense organs of the horizontal semicircular canal of the ear are also spontaneous dischargers of impulses, which are reduced or increased by rotation of the head in the contralateral or ipsilateral directions respectively.

A description of the structure of the Acanthodian fishes is now available, thanks to the work of Watson. These remarkable fishes present a number of features of first-class importance for the interpretation of the evolutionary history of the early vertebrates. The body was covered with bony scales, and both dermal and perichondral bones were present. The bone was of peculiar kind, rarely if ever containing bone-cells. It is interesting to note that in the earliest Acanthodians, while the visceral arches had thin layers of perichondral bone, the brain-case was only cartilaginous. The lateral line canals ran between two rows of scales. The nostrils pointed forwards. In addition to the pectoral and pelvic paired fins, there were numerous pairs of intermediate paired fins, which condition provides strong evidence in favour of the evolution of paired fins from longitudinal fin-folds. The gill-slits were protected by a mandibular operculum; the hyoidean slit was large, and the hyoid arch played no part in the suspension of the jaws. This feature is used by Watson to characterize the group termed by him the *Aphetohyoidea*, containing the *Acanthodii*, *Arthrodira*, *Antiarchi*, and others, and which represents the most primitive grade of Gnathostome vertebrate structure.

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